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JAMES C. BUSH, Editor.

Authors alone are responsible for opinions published in the Journal.

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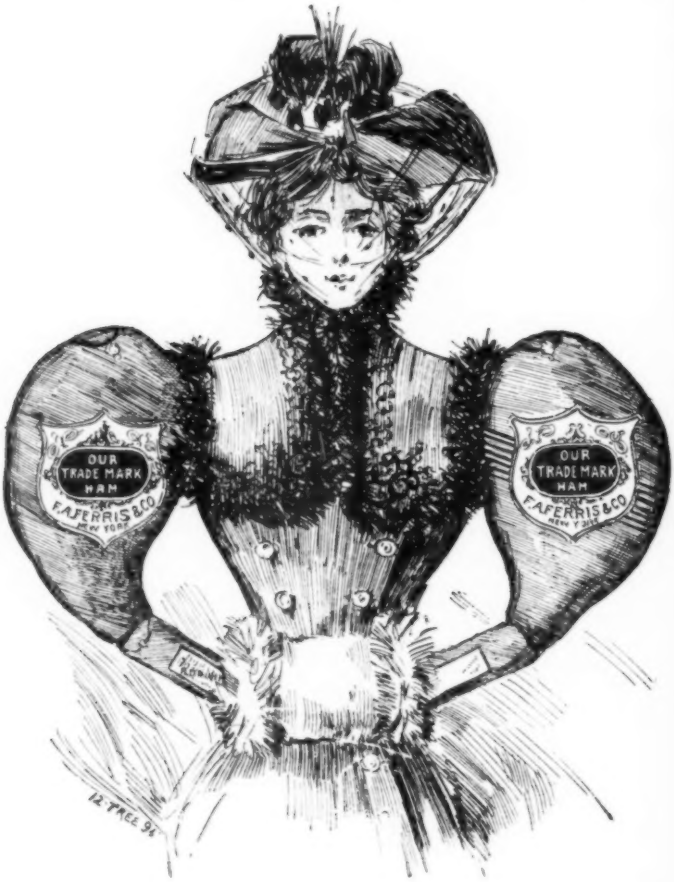

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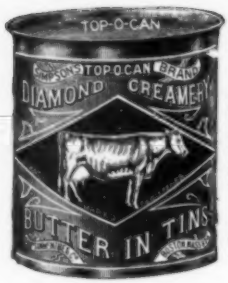

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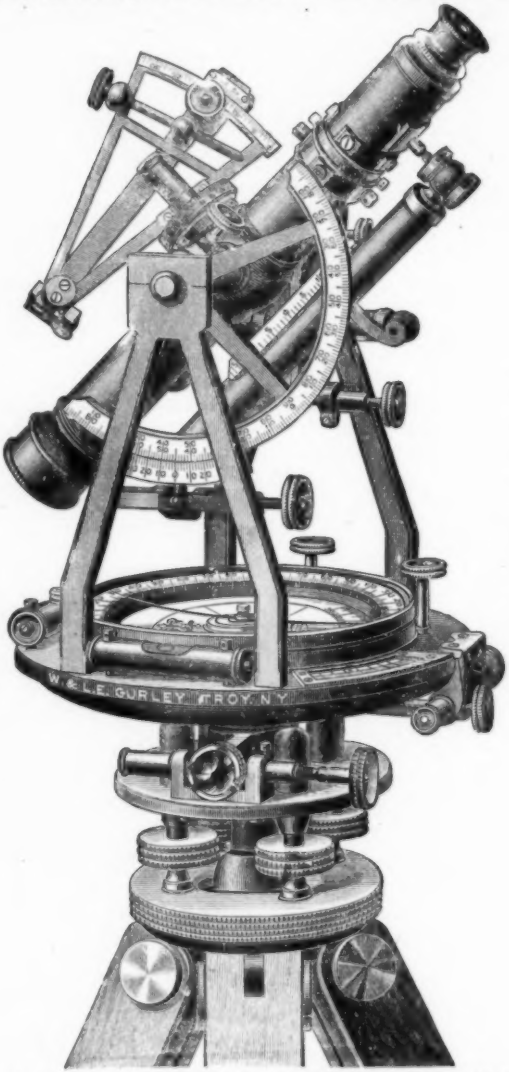

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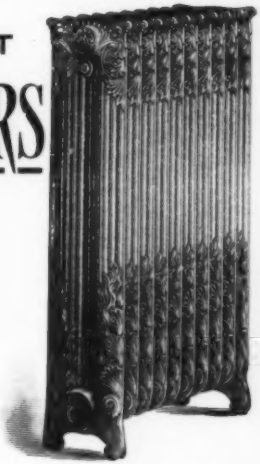

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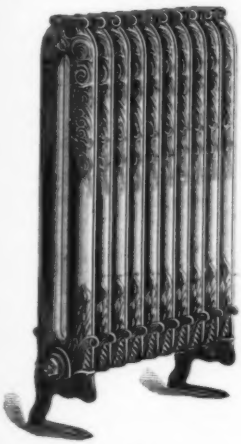

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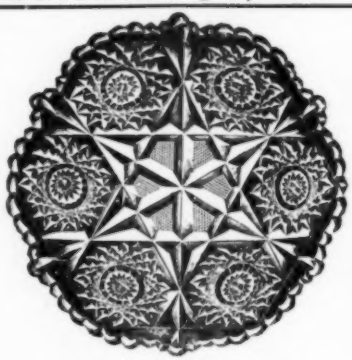

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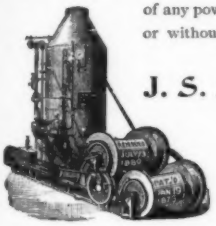

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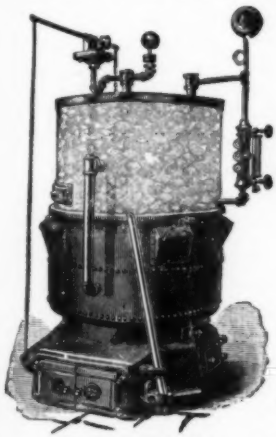

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VOL. XVI. MAY, 1895. NO. LXXV.

A PAPER ON MILITARY LIBRARIES.

BY COLONEL HENRY W. CLOSSON, 4TH U. S. ARTILLERY.

WHEN a man once begins to meddle with book catalogues it is a sure sign of the working up to the surface of that literary instinct inherited from the study of names with which Adam occupied his office hours before Eve monopolized his time, and the first step in a pursuit the end of which belongs to nobody but the undertaker. It is quite possible that he furnishes a temporary interruption since we know on good authority that there are books in heaven and also that they are opened and read.

In this perusal of catalogues there is ordinarily just enough doubt and danger to maintain the excitement but never to stop the chase. What makes life so desirable is our ignorance of the future and our liberty of expectation. So with booksellers' lists —on the very next leaf may lie an answer to a question or two that has long been the torment of our waking hours and the delight of our dreams.

The calculation whether this or that volume can reasonably be afforded, the resolve to wear an old blouse a little longer or even to put a patch by way of service chevron on the last pair of pantaloons—to drop Perfectos for the briarwood and dry up the liquidation at the sutler's store, to search for a pencil just to

mark off books that one would like to own but with no intent to purchase now, no—not a bit of it—checking off one and another of the selections as perhaps the least desirable, picking out something here and another thing there that a man really ought to have, postponing final determination until we can sleep over it, revising the list next morning and concluding to put the whole matter aside for a month, going to dinner with good appetite and abundance of self-congratulation that we have resisted the tempter and that he has flown—and then, a sudden wave of impulse overmastering all prudential considerations, to sit down and direct our bookseller to procure every item of the original memorandum, with several hasty additions on the principle that a cold bath is better than wet feet, to mail the letter before the temper cools and, in order to satisfy the conscience, going out to recall the messenger after he is reasonably certain to be beyond reach —he who does not know the process and has not felt the fascination misses one of the great objects for which we were born into a world of printing presses and paper mills.

We see it exemplified in Washington himself. While at Newburg he wrote to one of his friends in New York City to send him some books and along with them a catalogue that he might select more, turning at the very first opportunity from the war to his library. He wanted for instance Goldsmith's Natural History. This must have been one of the early editions that would presumably contain the paragraph about cows shedding their horns when three years old. It would have been worth a first folio of Shakespeare to watch the Master of Mount Vernon take in that bit of information. For it is one of the charms of reading to come across a statement now and then that establishes at once your superiority over the learned author.

The Duke of Wellington in reply to some bore who strove to fill him with commonplace information about musquetry practice exclaimed, "I may not be very familiar with dates and events of the French Revolution but,"—wrathfully raising his voice—"I do claim to know something about copper caps." And then the Duke went on to assert that they never could be used except by the flank companies of regiments. He knows better now but meantime he has contributed largely to the happiness of lesser men who like to feel that they blunder in the best of company.

With the constant additions from abroad to his library that Washington's station would invite, the presentation copies that

would naturally abound, and his own purchases, it is singular that he should have so small a collection to his credit—less than a thousand volumes.

Possibly the explanation lies in his so much more unworthy occupations of planter, General-in-chief and President of the United States. They confiscated his time to the prejudice of the delights and rewards of the book-buyer.

Of course in the accumulation of a library there are extremes to be avoided, from the man who contents himself with one book, and generally borrows that, to the hero whose collection required twelve huge octavo volumes for the catalogue alone and who moved out of one house after another as space failed him for his continual additions.

Such a monopoly of literary riches is very reprehensible unless atoned for by post-mortem donations to the public. Far be it from us to commend or imitate the extravagance—we draw the line at one house-full, including entries and stairways, and the basement—if dry.

On the other hand the man of one book is a conspirator against the public peace. In the secure possession of the little he does know his confidence becomes exasperating and his arrogance insufferable. The ring of the few coins he has is always found so true that he is made the centre of a vast fictitious credit, though from one solitary gobble, genuine as it may be, it is never safe to affirm the vicinity of thousands of turkeys.

But let this objectionable singularity of ownership be qualified by a momentary possession only, it becomes a very different matter and is the ideal process for the elect, as in the case of that scholar who never owned but one book—*at a time*. Having made himself master of its contents he exchanged it for another and that for a third and so forth, the old information never displaced but only increased by the new.

If we had or could acquire the mental grasp and retentiveness this method demands it would greatly simplify cost and room. There would be no question of bookcases, whether of walnut or pine, and no expense of transportation for the fortunate man who would carry his library in his hat. There are such people. It is told of Professor Porson that he could read a page or two from a book and immediately repeat it from memory. "All very well," replied one of the company once present at the performance, "now say it backwards." And the Professor did so.

It is comfortable to add that he missed two words, which mightily helps belief in the balance.

Left on one occasion after dinner with an Italian novel and two bottles of wine he sat up all night and next morning gave a translation of the story from memory including over forty names of persons and places, only one of which he had forgotten, and that subsequently he recalled. The wine renders it the more marvellous for that fluid seldom serves to "bite in" the talk or the page it flavors.

One day the Professor was visiting a friend who was reading Thucydides and was asked about the meaning of a certain word. Without examining the book he not only explained the word but quoted the passage in which it stood. Questioned as to how he hit upon the exact connection his answer was that the word specified was found only twice in Thucydides, once on the right hand page of the edition used and once on the left. Observing the side to which the reader turned the Professor knew the context.

These illustrations might be largely increased, and it is not wonderful that the Professor regarded his memory rather as a source of pain to him since he could never forget anything. After all it is a blessed power that same—the power to forget. A memory too tenacious is like importing the sparrow and through his diffused perversity losing robin, lark and bluebird. And it is a faculty that works to best advantage sometimes through the eye and sometimes through the ear as when we recognize acquaintance readiest by face and gait or by the voice. The blind remember by touch and the dog by smell. Professional experts detect and locate varieties of wine by taste. What long linked trains of thought are summoned into recollection by certain atmospheres from the roses of June to the sleigh rides of December! But the Professor seems to have united the five senses into one. He had an eye for place, an ear for accent, brandy helped his grammar, he had the text at his fingers' end—but his nose was no more efficient than that of the ordinary schoolboy for whose tribe the hexameters of Virgil and the periods of Demosthenes have a distinct odor of birch.

It is worthy of note that Professor Porson put forth no claims to exceptional abilities or peculiar gifts. He insisted that his memory was originally no better than that of other men. "I have made myself what I am," he said, "by intense labor.

Sometimes in order to impress a thing upon my memory I have read it a dozen times and transcribed it six."

Now intense labor is within everybody's reach, but it differs from extensive labor. In other words, instead of reading six books once read one book six times and then pass on to the next. Frequent reviews are the price of sound scholarship and of handy knowledge, as unlike mere accumulation as a Mississippi snag is unlike the same tree turned by axe, saw and plane into ornament and use from baseboard to cornice.

The systematic stowage of what is read in the memory enables its reproduction under any circumstances and secures to men a triumph over time, distance and death. Our heirs or their lawyers may divide among themselves deeds, bonds and gold, but that which has been woven into the mental and spiritual structure abides with us forever.

The conclusion must be that the library, however large, is of final value to us only so far as our labor reduces it to its essence and lays it away by that most miraculous and yet daily transubstantiation of motion into emotion, of things into thoughts, of matter into mind, which perhaps are only the under and upper side of the same entity, the root and flower of one growth.

A single reading of any book hardly perfects even the general plan and outline. The second serves to establish details and parts in their true relation to the whole and a final reading is necessary for elective purposes, bringing the baggage of the text down to campaign footing as Dr. Liebig concentrates a herd of cattle into a jar.

This is the time to declare war upon the text and require it to give in both countersign and parole before it passes the lines.

For instance, we are told that when Prince Louis Napoleon landed at Boulogne he brought with him a tame eagle trained to fly in circles above his head and incited to alight upon the crown of his hat by a piece of bacon previously placed there. Not to interfere with the course of the story we let this go at first, but before adopting it as a permanent acquisition proceed to investigate. It has a doubtful look and sounds more like the familiar legends of a shoemaker's shop where the village worthies meet and sublimate the chips of history with their tobacco into the fantastic architecture of cloudland.

And if we turn to the life of Napoleon by Jerrold we find that

at Margate, just as the expedition left England, one of the men bought an eagle offered for sale by a seaman on the pier.

On reaching Boulogne this eagle was never taken off the steamer but was found on board at the capture of that vessel after the landing and duly entered in the list of contents.

Looking along the line of direction of any one book will not give us a true estimate of range and accuracy. That must be verified by the intersection at broad angles of other lines of reading.

In the matter of Napoleon, for instance, it will be necessary to cross-examine the later records of Madame Remusat by her earlier letters, to compare Lanfrey with Marbot and balance Professor Seely with Professor Ropes.

If our library is to guide us wisely over the sea of literature it will never do to trust to one mirror. The reflection must be multiplex to light the whole horizon.

Take an illustration nearer home. Periodically travelling the round of newspaper and magazine appears the story of the importance of one vote, told in a variety of ways, the heading of one of which is, "How a pig caused the War of 1812." There were two neighbors located, in the present version, at Providence, R. I., both Federalists in politics, but one owned a garden and the other a pig. From such premises it is hardly necessary to develop the conclusion. There was the usual remonstrance and the usual neglect until the destruction of a tulip bed brought the irate gardener on the scene with a pitchfork and the pig straightway became pork. In a month or two the man with the tulips was nominated for the State legislature. The man with the pork now voted for his opponent, a democrat, who was elected by one majority. He in turn gave his vote to the democratic candidate for senator who was chosen by one majority and that senator voted for the declaration of war with Great Britain which was carried against the Federalists by one majority.

So the U. S. navy got its chance. Perry, McDonough, Hull and Decatur won their laurels, Scott and Jackson their fame, all through the massacre of the Rhode Island pig.

On this we might moralize for pages were it not for the chilling historical fact that the declaration of war passed the House of Representatives by a vote of 79 to 49 and the Senate by a vote of 19 to 13.

But our friend the pig has more lives than a cat and perenni-

ally turns up triumphant with all his glorious retinue of consequence, now in New England and now in Ohio, until in future we may expect that the legend will cross the Mississippi obedient to the demands of younger states who will transfer pig and vote to the Sixties.

One of the largest libraries in the world is that of the British Museum, and one of its most notable additions was the collection of Thomas Grenville about which are several points worth consideration.

There were 24,000 volumes valued at $250,000. At his death he was over ninety years of age and for most of his life had been in possession of places where there was little to be done except draw the salary. This income added to the gift of a large fortune from a cousin enabled him fully to gratify almost any wish that a lover of books could form. Actual place and places in reversion he held, one it is said from his fourth birthday.

There was no straitness of means, no marital frown to freeze his purpose, no fear of millinery for the madam, boots for the family, Vassar for the girls, Yale for the boys, to blight desire whether for rare editions or costly bindings.

But he studied as well as collected, collected to study. In his copy of "Dean Sherlock on Death" was a note by his hand, "Read thirteen times in 1846," in the December of which he died.

The British Museum became the possessor of his accumulations because, as he himself stated, he had been most materially aided in making them by the sinecures he held. Therefore he determined "to bleach his conscience" and return to the nation what he had received from it.

He would seem to have read the discourse on death to some purpose and the circumstances of his heirs left him at liberty to think less of them and more of the generations of men to be benefitted by his wise use of the means he had enjoyed, to a greater extent than most men, but like all of us simply as trustee, talents to be put out at interest against the coming of the Giver who will reckon with us for the use of his goods, and, if generously for their use, with all the greater severity for their disuse, the one thing not to be tolerated being he that hideth his lord's money.

Thomas Grenville was for a time an ensign in the Guards but neither the temptations of the mess nor the allurements of society withdrew him from his long search for books. While a sub-

altern he bore away from the competitive bidding of a whole bench of bishops a scarce edition of the Bible, and that he was systematic and far-seeing in the indulgence of tastes that yield a better harvest to patient study and watchfulness than almost any other pursuit is shown by the rank his collection held, for it is never referred to except in terms of the highest praise.

The impulse to possess and take the chances of value in the possession is only one form of that love of gambling which reconciles deacons to church fairs, drives ladies to the bargain counter and tempts the impecunious student to possible prizes in the cellars and corners given over to second-hand literature.

The prizes are there to be detected by the zealous and careful seeker, but the triumph of discovery and acquisition may be clouded by uncomfortable doubts how far the purchaser's superior knowledge has a right to take advantage of a seller's innocent ignorance. This is the thorn in the roses gathered by the bibliophile, who has no more right, however, to unadulterated happiness than other sons of men.

As you turn over the stained and dusty volumes for any of which the price is but ten cents, according to the placard posted above them, your idea of their value becomes that of the advertisement and after all you feel a respectful pity for these ancient evidences of a life struggle long over and gone and the dead hands that once were so glad to hold these torn covers and the eyes that once were so bright as they studied these faded leaves.

Here too is a volume of poems compiled—so states the brown title page—"with great variety of wit and learning, full of delight, etc."

Where now, two hundred years later, is the wit and the learning, where now is the delight? And you toss the thin octavo back and wonder who Anne Bradstreet was, nor do you notice that seedy individual at your elbow peering with sharp eyes over the book you cast aside, for if there is anything absolutely worthless between bookbinders' boards it must be "the several poems compiled" by ancient gentlewomen a century or two ago, and as the obtrusive old man beside you seems determined to monopolize the shelf, you pass on down the street.

A week or so after you are carelessly examining a catalogue and the eye falls upon something about Anne Bradstreet. The name seems familiar—why? Glancing along the other items, suddenly the book tray on the street corner comes into memory and

you see it all again, the musty pile of castaways, the blotted ten cent notice, the loafer who elbowed you along the walk and the volume of venerable poetry you abandoned to his clutches—Great Scott! Mille Tonnerres! Donner und Blitzen!—what is this? "Second edition, corrected and enlarged, Boston, printed by John Foster, £52.10 shillings"—only $260—that's all.

It is of no use to seize your hat and cover the ground between post and town like a swallow. Anne Bradstreet and her poems, the wit and the learning and the delight have vanished, and vanished your opportunity of exchanging ten cents for five times as many pounds.

Book collecting, like all trades, requires a long and severe apprenticeship and thorough knowledge of the market. It is an investment which pays in any event, but from a financial point of view requires as much special study as a railway guide or the route of a comet. The results may be made as uncertain as futures in cotton or shares in sugar or become as productive as the Chemical Bank.

Books too vary like people. There are some that few of us care to know and Doctor Johnson's library illustrates the kind in its list of cumbrous quartos and folios, useful once to him but of little interest to us. Old chronicles there were, ecclesiastical annals, sermons, lexicons, etc., the tools of his trade in the manufacture of his dictionary which he says "was written with little assistance of the learned and without any patronage of the great, not in the soft obscurities of retirement or under the shelter of academic bowers but amidst inconveniences and distractions, in sickness and in sorrow."

These words of his and those of his letter to Lord Chesterfield are like a litany echoing with the proud melancholy of the long strife and the final success—deprived of half its value in the loss of those with whom he would have most cared to share it.

Johnson had in his library Macaulay's History of England—not the Macaulay born on the anniversary of Agincourt, the Macaulay of the Lays, who has left for us that pen picture of one who

> "Saw on Palatinus
> The white porch of his home,"

ere he plunged into the Tiber,

> "Swollen high by months of rain,
> And fast his blood was flowing,
> And he was sore with pain."

but he shall have his reward and none could have a greater, for—

"In the nights of winter
When the cold north winds blow,
And the long howling of the wolves
Is heard amidst the snow—

When young and old in circle
Around the firebrands close,
When the girls are weaving baskets
And the lads are shaping bows,
When the goodman mends his armor
And trims his helmet's plume,
When the goodwife's shuttle merrily
Goes flashing through the loom,
With weeping and with laughter
The story shall be told
How well Horatius kept the bridge"—

or varied to suit the battle lore of the youths and maidens in the new Continent—

How stoutly Hancock held the crest,
How stoutly Pickett forward pressed
That time at Cemetery Ridge
"In the brave days of old."

If Macaulay was no poet we shall need a new definition of the gift.

To reach chords in our individual experience and aspiration and "set them to trembling" with melodies that delight the sense and forces that stir the heart, building into completeness our own imperfect recollections and imaginings of what is most worthy in man, lifting us ever to clearer atmospheres and higher levels of thought and action is the province of the poet, and the story of Horatius told as a Macaulay tells it preserves and extends the line of heroes through all time to come filiated by that most dignified of descents, nobility of action.

"If I feel," says a modern mystic, "if I feel physically as if the top of my head was being taken off I know that it is poetry."

This definition was elaborated in the rural solitude of a New England winter and was due possibly to want of exercise or to overmuch Browning. Unfortunately it would make an epic of a policeman's club, or might be at any time brought about by a dose of nitro-glycerine which has not heretofore been regarded as a source of inspiration.

Doctor Johnson did not have the pleasure of including Ma-

caulay among his Lives of the Poets, nor the still greater pleasure of reading the life as written by Trevelyan. The English History he owned was the work of Mrs. Macaulay—why he owned it does not appear, for being asked if he had read the second volume he replied with his habitual politeness, "No—nor her first either," evidently a book this, like so many others, for the shelf and not for the desk. "She is better employed," the Doctor said on another occasion, "at her toilet than with her pen, better be reddening her own cheeks than blackening other people's characters," illustrating what we have previously stated that a man's real library reflects his own image.

For the doctor was a thorough tory and hated a whig as he professed to hate a Scotchman, though indebted to a Scotchman for becoming a household name wherever English is spoken. Mrs. Macaulay did not write history from the Johnsonian point of view, that of him who wrote, "Taxation no tyranny," and was "willing to love all mankind—except an American."

It may not be amiss to dwell a little longer upon this matter of critical opinion, whether of battles, books or sermons, sometimes confirmed and as often reversed in later days as when the grandson of Richardson refused to allow his children to look at Clarissa Harlowe though the fine ladies to whom the author read it listened with delight, no less perhaps than his own, and of any shock to the proprieties felt as little as he.

Over the famous sermon of Sacheverell that once set a kingdom by the ears the dust lies piled nearly as high as over the preacher, and the Count of Palikao and the Duke of Magenta with the battle-fields that gave them their names now belong rather to the antiquary than the soldier.

Even the Crimean Campaign we remember not for any permanent acquisition to the so-called victors but for the enormous waste and sacrifice under which it staggered through its chapters of accident to its futile termination.

If we want a good base line from which to locate men and manners in the Eighteenth Century Johnson and Walpole are excellent terminals. Their lives and letters belong to our libraries as chronicles of their day, while the *osities* and *ations* of the wordmaker are nicely levigated by the ease and cues of the letter writer, nor is it the least of the uses of both that their study may serve to mollify the stiffness of the military pen, generally no more flexible than a sponge staff.

And Walpole said of this same work of Mrs. Macaulay's that it was "the most sensible, unaffected and best history of England" yet furnished.

Even he changed his mind afterwards, as any man who writes nine octavo volumes of letters is apt to do, especially if they stretch over some sixty years. For he who is at sixty what he was at twenty in either politics, love, war or theology never could have been anything but a fool to begin with.

What did Walpole think about Johnson?

"The more one learns about him," said he, "the more preposterous assemblage he appears of strong sense, of the lowest bigotry and prejudices, of pride, brutality, fretfulness and vanity."

It has not taken a hundred years to reverse that verdict, in part at least. What will the next hundred years do with this declaration of a recent work, "The globe has produced three beings whose names will perish only when the earth itself shall be dissolved into its elements—a poet, an artist and a man—of them Britain claims two, Italy one"—the reader will please stop here and complete the trinity for himself.

According to the authority quoted it is

> "Shakespeare, the poet,
> Michael Angelo, the artist,
> Wellington—the man."

That prediction is the wisest which has the least to do with particulars—parallels as they remove into the distance are apt to converge and in the present case it is doubtful if anything but the poet will remain.

There was little in common between Walpole and Johnson, one of whom is pictured as entering a room with hat under the arm, powdered hair, knees bent and feet on tiptoe, dressed in a lavender suit, waistcoat embroidered with silver, ruffles and frills of lace, stockings of silk and gold buckles, while the other with his seamy face, scorched wig and rusty suit had the build of a porter, knocked down an impertinent bookseller with his own folios and carried a club like a telegraph pole as a salutary warning to saucy actors and wrathful writers who threatened to mimic or chastise him.

And yet these two men live to the life in their words among us now, while Mrs. Macaulay, once one of the sights whom foreigners were carried to see, survives only in a shadowy obituarial way in the more recondite encyclopædias.

She had also the somewhat unusual tribute of a monument in her lifetime instead of the ordinary post-mortem delay of a century or two. But what was so quickly put up as quickly came down. Built by an enthusiastic rector of liberal proclivities it was removed by his conservative successor as a very questionable item of church furniture. And this lady in the course of her life paid a visit of respect to George Washington the details of which have not come to our notice or we would most certainly reproduce them.

There is no record that we have read of a meeting in the flesh between Johnson and Walpole, contemporaries though they were for seventy years. They must have walked the same streets and mingled in their shifting multitudes, and their lives stand together upon our shelves with other singular juxtapositions which would form a subject for a paper by itself.

But the tory doctor and the demagogue Wilkes dined very comfortably together, one helping the other to choice bits of the roast, select crumbs of stuffing and delicate scraps of the brown and both steering the talk safely between Scylla and Charybdis. More is the pity that Strawberry Hill and Bolt Court could not have exchanged hospitalities.

So we leave Johnson dusting his books by occasionally knocking the ponderous quartos together and piling them anywhere about the room—Walpole hovering over his rosewood cases of coins, his choice editions arranged under Gothic arches of pierced work—the two as opposed as a page of Walt Whitman and a poem of Longfellow.

We know that Mr. Grenville with his library of 24,000 volumes did very little towards book making himself, while Cowper, we are told, during the time he was engaged with the greater part of what he published had a collection of nine volumes only, increased at the time of his death to about 200. And these were largely theological, much to his own hurt, but as might be expected, the author of John Gilpin's Ride from London Town to Ware—

> "And when he next doth ride abroad
> May I be there to see"—

was also the owner of Don Quixote and Hudibras, as well as Horace, a little of whose genial confidence in human nature would have lifted the recluse out of the cloud of conviction that he was a child of the devil and an outcast of God.

It is well to see something of life in the streets and market places rather than dream over it on the sofa or by the desk. For we live too much in the cast-iron routine of precedent, regulations and orders, in a linked series of states of simple command and obedience with very limited lateral play for thought and action.

Restrained towards subordinates, frank with equals, and deferential to superior authority, taught rather to shun than seek discussion, not overflowing with respect for the delay, evasions and compromises of politics, the futilities and artifices that exhaust the leisure of those who have nothing to do and everything to do it with, for the flatteries, dexterities and abstractions of dispensary, bar and pulpit, the malice, rivalry and concealments of business life, we are too pleased with our isolation and apt to forget in the grease and stench of the mighty machinery beyond what forces are working there and compelled to work there for the benefit and ultimate redemption of mankind. There come occasions when they need us badly but we too stand in need of them, and mingling with the whirl and change for a time will render less dangerous the solitude into which we can withdraw.

Cowper was content that his library should contain but little besides his own works which cost him nothing but time and thought, better spared by him—so he said, than money. Most of us would prefer to buy rather than write our books but the latter process is within the reach of everybody and commends itself on the score of cheapness.

As Cowper's biographer notes, a man who orders tooth-pick cases at half a guinea and buckles for his stock at a pound apiece will have to economize on books. It may be jewelry or it may be Josephus, Meneval or Monopole, it can seldom be both.

But there have been those who, in the absence of means to buy have actually borrowed and copied out the books of their wealthier neighbors.

Others denied this resource have "snatched a fearful joy" over sidewalk displays of second-hand literature with one eye on the page and one on the surly shopman whose tolerance might sometimes be secured at the rate of a penny per hour from the less impecunious of these undesirable patrons.

In these days of many inventions when whole volumes in passable print and paper can be bought for a quarter it must be a bitter poverty which deprives any book lover of all consolation.

Perhaps it is a worse fate to be like Southey in his last years, master of shelves overflowing with books in every direction and yet the tired, wornout brain refusing even to recognize the old, familiar faces. Few men have written more—fewer have been so confident that their work was immortal—

"Non omnis moriar,"—

and yet our libraries are seldom furnished with either his history, poetry or reviews, while there is no end to lives of him, always a story full of interest because so full of faithful, honest labor and the unwearied discharge of the duties that lay about his own hearthstone. It is always pleasant to think of him with Wordsworth and Coleridge holding high carnival over bread, cheese and beer at some roadside public, and pleasanter yet that supper at which Shelley was a guest on a certain washing day when Southey and his wife were sitting down to tea and tea cakes. A plate of these was handed to the visiting poet who, in the full career of one of his abstemious freaks, allowed himself hardly anything beyond stale bread and possibly honey as all that an immortal soul ought to require. The hot tea cakes "heaped up in scandalous profusion, well buttered, blushing with currants or sprinkled with caraway seeds and fragrant with allspice" seemed to Shelley vicious luxuries fatal to all pure life and true feeling. But Southey, tired with the day's labor and hungry as a man might well be whose notion of rest was simply to vary the occupation, to write prose instead of rhyme or hexameter instead of iambic or fiction instead of history, Southey continued with great satisfaction to munch the tea cakes pile after pile until the writer of The Nightingale and The Sensitive Plant could contain himself no longer. "Good God!" he broke out, "Southey, I'm astonished at you. It is awful to see such a man as you are devouring such quantities of this nasty stuff!"

This of course brings Mrs. Southey to the front. "Nasty stuff indeed! How dare you call my tea cakes nasty stuff, sir? I made them with my own hands out of my own flour in my own pantry, and you tell me to my face they are nasty. You ought to be ashamed of yourself. Surely my husband has a right to eat what his wife puts before him."

Meanwhile Shelley was closely examining the cakes. Finally he put a bit into his mouth—it was good, no doubt about that. He ate one and asked for another and soon was dispatching them as vigorously as Southey himself. The batch was exhausted,

and more were called for in vain. Mrs. Southey, soothed by the evident relish with which her supper was now enjoyed, expressed her regret that she had not made a more generous provision, and Shelley declared the moment he reached home he would tell his wife all about it. They also must have hot tea cakes—every evening, forever.

But life had in store for both far other issues. One was to wander about his library unable to do more than pass his hands caressingly over the books he still loved but could no longer use, and the other to be drowned at sea with a volume of Sophocles in one pocket and the poems of Keats in another doubled back as he had thrust it away interrupted in his reading by the turmoil of the storm. Much of Southey's work may now be useless lumber, but his life remains an inspiration to all that is true and lovely and of good report.

Neither is it proof of misspent time if the future shall fail to burden itself with any obvious result of our labor. What we have to do is to put in our best licks whether they leave a mark or not. The intent is our own, the power may not be, and the rest we can safely leave to the suns and rains under which we may lie forgotten, or perhaps like the century plant be found in flower long years after the senses fail and flesh decays.

> "Only the actions of the just
> Smell sweet and blossom in the dust."

And who is the just man if not he that pays his indebtedness to the past by gathering its literary stores and in handing them on unimpaired, discharges his obligations to the future if he does not become its creditor.

What though you may forget the books you have read? Another has asked, "Can you remember the legs of mutton you have eaten?" So books, if properly used, pass into the mental fibre and are made that part of ourselves over which Time has no control, neither Time nor jailers.

You may have forgotten Grotius. They studied him at the Academy in connection with the laws of war, the rights of neutrals and such-like dreary matter. He was sometimes coupled with another authority, Bynkershoek by name, greatly to our misfortune, for the instructor once called us up and desired a discussion upon a few legal points indicated by him.

We quoted Grotius uninterruptedly for five minutes and were feeling proud of ourselves.

"Yes, yes, that will do. What were the views of Bynkershoek?"

"Bynkershoek?"

"Yes."

"Don't know, sir—don't think he is in the lesson."

"Take your seat, sir," which we did and took 1.5 along besides.

That instructor in later years commanded a battery across the bay from our side and we hunted for him with a ten-inch columbiad all of one afternoon, chalking "Bynkershoek" on each shot, but to no purpose apparently since he was next heard of as a director in some Southern insurance company.

Even now we would not tell anything good of Bynkershoek if we knew it—as for Grotius, that is another matter. His career was as full of incident as one of Russell's sea stories. Few men of his day knew more. So they shut him up in jail for life mainly because he did not like made dishes in theology and objected to arbitrary rule in both church and state. Luckily he was a reading man and had a wife. She packed him out of his prison in a box, supposed to be a box of his own books. His was the sentiment which we would have made the text of this essay had we known it in time.

"Food and clothing I can do without," he said. "Food and clothing I can do without, but books I must have." And he had them and they gave him freedom.

Among the men of the *Edinburgh Review* in its old days of glory was Francis Horner of whom, by the way, Walter Scott observed, "He always reminded me of Obadiah's bull who though he certainly never did produce a calf nevertheless went about his business with so much gravity that he commanded the respect of the whole parish." An instance by no means solitary of the great importance of manner in this world of superficial observers who often mistake starch for strength as well as flourish for force.

Sydney Smith put the thing in a different way speaking of the same man. "He had," said Sydney, "the ten commandments written in his face." We mention him for the remarkable fact noted in another sketch that once when Horner was ill he was directed by the doctor to rest his mind and occupy himself only with amusing books. To this end his whole library was examined and the nearest approach to anything of this description that could be found was a work called "The Indian Trader's Complete

Guide." Perhaps this was to be expected of a man who carried the decalogue in his countenance. In the army we are seldom prescribed for in this agreeable fashion. The treatment is more heroic and rarely gets down to *Punch*.

But our libraries should not be unprovided with such healthful medicine. It should be, however, the best of its kind from high grade humor, as in the essays of Lamb and The Professor at the Breakfast Table, to lower varieties like the story of Hook's visit to the poet Campbell. Climbing the stairs late enough in the day to be somewhat unsteady, with more rum than roast beef aboard, Hook missed his footing and tumbled noisily to the bottom. Out rushed the poet.

"Hullo there; what's the matter?"

"Nothing," was the reply, "'Tis I, sir, rolling rapidly."

Sheridan, it will be recollected, did better still. Falling by the wayside and poked in the ribs by an inquisitive policeman who asked his name, he sleepily answered, "Wil-ber-force."

But much greater truthfulness and praiseworthy self-sacrifice was exhibited by that jovial member of the club homeward bound in company with a still more jovial comrade who reeled off into the ditch and begged assistance. The answer came deliberate and decisive. "I—can't—help—you—out—Sam—but—I—will—lie—down—with—you."

No more devoted act of friendship is on record in the annals of David, Damon or the Theban band.

An occasional dose of such reminiscences will be found fully as good a tonic and will leave a pleasanter echo in the ear than the normal six grains of quinine for lungs fed too closely on office malaria and minds perplexed with business worries.

Some pages back we looked over a street book tray with direful results, but no pursuit is without its disappointments which not too often repeated serve as a relish to the occupation. There is in reality little to choose between the wayside tramp who lacks everything and the millionaire who has no want that he cannot instantly gratify and for whom life has no happy surprises like that of waiting with fifty cents for a five-dollar book until time and patience unite to secure possession, or of slowly accumulating by a multitude of minor denials enough at last to resolve hope into fruition, as when Lamb wore the brown suit until it became threadbare "all because of a folio of Beaumont and Fletcher" that he brought away from Covent Garden setting off

for the same one Saturday evening after ten, fearing he was too late and wishing it was twice as cumbersome as he joyfully lugged it home. Lamb again it was who had been seen to devoutly kiss an old copy of Chapman's Homer. He did not

> "Kindle at the sight
> Of flushing cheek and soft blue eye,
> But in his high-backed oaken chair
> Welcomes many a grand old sage,
> Turning many a saffron page
> Of folio tall and quarto rare."

There was nothing specially sentimental about Professor De Morgan. He tolerated no shams of any description from those who professed to square the circle to those who would interpret Revelations.

But it was his opinion that "the most worthless book of a bygone day is a record worthy of preservation, like a telescopic star its obscurity may render it unavailable for most purposes but it serves in hands who know how to use it to determine the places of more important objects."

And the Professor's experience justified his opinion if it did form it, for there came a moment when it was important to ascertain the whereabouts of a certain contribution to a review, then no longer in existence. The article had not been published and if preserved at all was perhaps to be found among the papers of an unknown editor.

In this dilemma the Professor happened one morning to be lounging over the contents of a bookstall as was his wont to do. He chanced to pick up a volume of anecdotes about Macaulay. Turning over the leaves he came upon this remark—"At last it was decided to write to the editor (Mr. Walker) of the *European Review*."

Here then fortunately stowed away in a parenthesis was the desired name. The Professor, be it noted, was engaged throughout his lifetime in trying to get together a consecutive series of the early editions of Cocker's arithmetic but—dies without the sight.

With all our liberality we must draw the line at Cocker. The one thing not to be furnished is shelf room for any thirty odd editions of arithmetic whether by Cocker or Colburn. Rather would we follow college precedents and like Antony

> "Come to bury Cæsar, not to praise him."

Let us venture back to the corner where we lost that $250 book of Anne Bradstreet's. In the same miscellaneous collection is another which catches the eye of a military man—"Recollections of the Peninsula, London, 1823." We are tempted to pass it by for two reasons, it has no index and so if read will make trouble by leaving a driftwood of reminiscence ultimately to put us on a vexatious search through wrong books until by some happy accident we stumble upon the fugitive paragraph and lose half the pleasure of discovery in annoyance at the chase.

Then the name of the writer is not given and we are tempted to question the standing of all unbaptized literature in spite of Junius, The Whole Duty of Man, and a poem or two like Annie Laurie, The White Rose, or The Nut-brown Maid.

Here however right under our finger is a sentence that seems promising: "Four of us formed a mess but neither officers nor men at this period had tents, and no one except field officers and adjutants was mounted. My brother subaltern and I had a small baggage mule lightly laden between us, and in this the infancy of our zeal we carried knapsacks. One mule per company with camp kettles and the train of the brigade commissariat formed the whole of our incumbrance. On the morning of July 28, 1809, three days' provisions were issued to the men and we started for Santarem on the Tagus forty miles away."

Then he tells us how he was billeted on a private house. "The owner led the way to a neat apartment, and a pretty bedchamber, brought me water in a silver basin, while his good lady presented me with chocolate. I feared they had mistaken my rank and explained to them I was only a simple lieutenant, but they did not pay me any less attention, perfumed my chamber with rose-water, took off my knapsack with their own hands, and in the evening sent up to my room a quantity of fine old wine."

This was at the commencement of the campaign and before the ravages of war had demoralized army and people.

Of life in bivouac at a later time but still under easy conditions we get another picture. The writer and his companions now have tent, table, mattress, servants, etc. The column halts. Shortly after the kettle boils. A breakfast cloth is spread. There is a plentiful supply of crockery laid out under the shade of some tree and the friends sit down to a stew of rice, pumpkins and tomato, with a bottle of good wine. Sutlers follow them with brandy, tea, sugar and cigars. Two wants only are

felt, the company of books and of women. Once in a while, to be sure, there turns up an odd volume of some classic in Latin or French, and now and then a nunnery lies close to the line of march, but generally the writer has to be content with the luxuries of tablecloths and crockery.

Sometimes they passed by vineyards and orchards when peaches, plums and grapes enlivened the bill of fare.

The opportunities of men in ranks however were limited, for one of them is represented as saying to his comrade, "Look here, Bill, the parliament and the big folks at home know all about the generals, etc., but they don't know much about us, they don't know how tired I am and how hungry you are to-night."

At last the comforts disappear. Country is reached where the enemy has preceded them. The rains begin, the march is delayed, the baggage is not up. Fires are started with palings or doors or window shutters from the deserted cottages. Here one sits upon a kitchen stool, and there another leans back in a parlor chair cushioned in blue damask and ornamented with gilding.

Soldiers go straggling by. One offers a biscuit and one a drink of sour wine from his canteen. The darkness and the rain increase. Shoulders grow wet and chilly while the legs are scorched by the fire. Cavalry and artillery tramp along through the mud and finally morning breaks up the storm, and discomforts that weighed like mountains roll lightly away with the clouds. Again troubles increase, roads and weather grow worse. Streams and rivers have to be forded, sometimes breast high. The ground is soaked, no dry wood to be found and there is neither bread, biscuit nor flour. Lean bullocks are driven with the column and slaughtered daily. Putting scant rations on a stick or sword they broil them over such brief fires as they can kindle and devour the meat with smoke for a relish and ashes for a sauce.

Among the incidents of the march an officer tells this story. He lost his way and wandered for two days upon a by-road. At last he met a peasant with wife and children trying to reach Ciudad Roderigo.

Upon a mule the peasant was leading the officer spied a loaf of bread, and faint and almost wild with hunger he begged to purchase it but the man refused. Pulling out a purse he tendered a doubloon—two—three, but still the peasant declined to sell, saying, "My little ones cannot eat the gold."

On another occasion the writer and a companion, overtaken

by night and rain, both wounded and slowly making their way to the rear, spied a light at some distance and so found a lonely cot tage occupied by a woman who welcomed the wayfarers to her roof, heaped up the little fire, killed and cooked for them two of the few chickens she had left, and spread before the hearth for them a couple of straw mattresses since their need was greater than her own.

But the straggling and disorder increased until it could no longer be tolerated, and an attempt was made to bring some system into the confusion of the campaign. Wellington directed that three tents per company should be packed upon the mules and that the large iron camp kettles heretofore used should be abandoned and smaller ones substituted to be carried by the men themselves.

The writer was greatly impressed by Wellington and watched him closely one day as he reviewed the troops, noted the quick glancing eye, the prominent nose and compressed lips significant of the ready presence of mind and the imperturbable decision of a great commander.

Subsequently having reached winter quarters at Coria, Wellington, as quoted by the writer, sent round a very plain-spoken circular to his troops telling them they had displayed on their retreat a greater want of discipline than any army with which he had ever served or of which he had ever read. The men were told they had suffered no privations which could justify the least irregularity or account for the losses they had sustained, and they were bitterly reproached for being far less handy at cooking than the French, which was rather hard considering the national characteristics of John Bull, who was always more at home in the use of carving knife and gridiron than of the stewpans and bake ovens that belong to field service, where he pulls through his work with plenty of dogged endurance but very little of that pliancy and diversified adaptation to circumstances in which the French excel.

The writer states however that the French had a great advantage in messing by twos and threes while the English kept to their company organization and were under strict orders not to pillage.

This was in the winter of 1812–13.

In the campaign where Wellington was opposed to Massena the allied forces are computed at twenty-five thousand Portuguese and thirty-five thousand English, a larger proportion than he had present under his control at Waterloo.

THE RELATION OF HYGIENE TO MILITARY EFFICIENCY.*

By Major P. F. HARVEY, Surgeon, U. S. Army.

Non est vivere, sed valere, vita.—Martial.

IT is a fundamental principle in the art of war that a hidden and silent enemy is a far greater menace to the success of military operations than one which can be seen and heard. Works on tactics and strategy are replete with directions for guarding against attacks by surprise or ambuscade, but are silent concerning a most formidable enemy to armies, whose mode of attack is not mentioned, and the repulse of whose assaults is left almost entirely to the efforts of a small contingent of the military establishment. This terrible foe is Disease; in its intangible and insidious germs reside a potential death dealing power and a peril to the success of strategic movements greater than in the bursting shells and leaden hail of the opposing army. Prior to the invention of gunpowder when the wager of battle was decided by hand-to-hand encounter the mortality from casualties on the field was dwarfed into insignificance by the fearful fatalities from disease. During the Crusades the losses in battle could be practically ignored as compared with the myriads cut down by the effects of exposure, starvation and sickness. And notwithstanding the perfection to which modern invention has brought the man-killing enginery of the battle-field, in all modern wars of any duration, disease has claimed from three to four times the number of victims that have perished by the weapons especially designed to maim and to slaughter.

Obviously, therefore, there should be entire concert of action between medical and line officers in the practical work of sanitation, as the enemy fought specially by the surgeon is ever present, the common adversary of mankind; while the foe that calls the line officer to exercise his particular profession shows its grim visage only at rare and uncertain intervals.

In its efforts to explain the nature and cause of disease the

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human mind groped for many centuries in darkness, vainly seeking to render natural phenomena intelligible by invoking the aid of supernatural powers. Thus to-day the superstitious Indian imagines the air to be tenanted by the viewless spirits of the dead and the powers of good and evil.

Disease to him is the production of a spirit and hence his medicine man is a priest.

Not many years ago the most enlightened nations of the earth thought epidemics and many forms of sickness, especially nervous disorders, were caused by the so-called powers of darkness, by evil influences exerted by the stars, by a displeased deity or by the evil eye of a witch. And even to this day the peasantry of most European countries hold to a similar belief. Faith in amulets, charms, incantations and exorcisms of greater or less degree may be found to prevail even in the ranks of the refined and educated. A friend of mine wears an iron ring on one of his fingers to keep off something—I don't know what and I don't think he does, but he has great faith in it. Another friend, a man of superior acuteness and intelligence, put a necklace of amber beads on each of his children so they would be sure not to catch the croup! Ignorance depends not so much generally upon deficient mental power as upon lack of demonstration. A knocking heard at dead of night in the wall might be thought to be a spirit rapping, but if one lights a lamp and shows that it is only the performance of a small insect, called the "death-watch," the spirits vanish and the simplest mind accepts the truth.

To the unenlightened mind of primitive races the causes of many diseases were indeed powers of darkness, since they had no means of seeing them and knowing what they were. No wonder then they believed them to be spirits. If by some metamorphosis of sight they had been endowed with the power of seeing those innumerable enemies of health that floated in the air they breathed and swarmed in the food they ate and the water they drank they would have known that physical means were needed to combat them, and that no curative action could result from efforts to propitiate evil spirits by gifts or drive away timid ones by noise. About 200 years ago the powers of vision were so increased by the invention of the microscope that a Dutch physician named Leeuwenhoek saw some minute forms of life in decaying teeth, and believed them to be the cause of the decay. But no special advance took place in our knowledge of the nature of disease

poisons until more than 100 years after Leeuwenhoek died. Then began investigations into spontaneous generation and fermentation which gradually evolved the bacteriological epoch of microscopy of the present day. The toilers in this field have given to the world vast stores of knowledge concerning the nature of disease and its treatment and especially rapid advancement has this knowledge made in the domain of preventive medicine and of surgery. Human life has been inconceivably added to thereby. The surgery of to-day is so wonderful that I cannot forbear a reference to it in passing. The various cavities of the body are opened, diseased tissues removed, and men rescued from impending dissolution; the wind pipe invaded by cancer is cut out, and an artificial larynx supplied whereby voice and health are given back to the patient—three triumphs in one; the idiot is made a wise man by an operation upon his skull which enables his brain to grow; and even the central abscess in the brain is located and emptied and the paralyzed and dying victim restored to health and friends. Accounts of these achievements sound like romance but they, and many others equally marvellous, are realities.

To face such exigencies successfully of course implies the possession of the special skill of the trained physician and surgeon; indeed the advance of medical knowledge in recent years has been so rapid that to be a master of any one of its specialties requires an exclusive devotion to its study and practice. But outside of this special knowledge there is a sphere of medical usefulness for the layman that is becoming more and more recognized. I mean the public application of the principles of hygiene, and what to us is of more immediate interest, their application to the military service. It is the duty of medical officers to be adepts in sanitary science and I believe that some knowledge of it should be made an essential part of the education of all military men. By the stern logic of war the order of humanity is so reversed that we are forced to the apparently inhuman conclusion that death in battle is less deplorable than illness, for the reason that a sick man detracts as much from efficiency as two who are killed, on account of the care the former requires of the well. Hence the virtue of an army lies largely in the physical well-being of the troops composing it. It is admitted by all authorities that the conditions of military life even in times of peace are rather less favorable to robust health and longevity than the circumstances under which civilians are placed in towns and cities. Some of the causes of this are ex-

posure to heat and cold, irregular exercise, impure air, night duty, drink and tobacco habit, depressing moral influences from absence of home surroundings and various sanitary neglects. It is true that formerly the mortality among troops was largely in excess of what it is at present.

When England began at the end of the Crimean War to introduce improvements with a view to ameliorate the condition of her private soldiers upwards of 18 deaths per 1000 men were occurring annually among the troops serving in the United Kingdom. Under the effects of improved sanitation the mortality dropped from 18 to 7 per 1000. Similar returns from the colonies gave an average of 46 deaths per 1000 before improvements and 12 per 1000 after their introduction. The tables which show these facts are very instructive and forcibly illustrate the immense and immediate benefits resulting from improved military sanitation. Sir John Hall, Inspector General of Hospitals, upon one occasion during the Crimean War, made a requisition for a building occupied as a stable for mules, to be turned over to him to be used as a hospital for sick and wounded soldiers. After considerable correspondence and delay Sir John announces that the mules carried the day. (Hammond's Hygiene.) If that was an average specimen of the treatment of the sick and wounded by the British authorities at that time we can readily understand why the mortality was so largely reduced in their armies by the reforms referred to.

The sick and death rates are yet too large. In the year 1889-90, 872,944 persons died in the United States—nearly 500,000 of these deaths were from preventable causes. But an enlightened public opinion has happily recognized this state of affairs and in most civilized countries in addition to instruction given to medical students, popular lectures and demonstrations in First Aid and Hygiene are given to the people. In England, Germany and France hundreds of thousands of people have received this instruction during the past few years, and been more or less qualified to aid a fellow creature when injured or sick, and to apply the principles of hygiene to their own daily lives. In our own country there is a society called the "Red Cross Association," which is performing for the people a similar service.

It is equally the duty of all right minded men to diminish as much as possible the useless expenditure of human life.

If an infraction of a law of health was followed in all cases by

its appropriate penalty as quickly as pain follows an injury there would be fewer sanitary transgressions; but violated nature many times is slow to wrath and her warnings are unheeded until a broken down organ signalizes the wearing out of the vital machinery. Sane men do not maim or mutilate themselves intentionally, but are constantly on their guard to avoid such misfortune. Yet many times they recklessly and wilfully invite bodily conditions infinitely more grave, because incurable, by persistent violations of sanitary laws. A sensitive conscience is troubled by the thought of a neglected duty of no importance but there is no monitor in most persons to torture them for hygienic infractions. The cultivation of a sanitary conscience would be a blessing to humanity.

If we could witness the evolution of future civilization we might in course of time behold a state of society such as Dr. Richardson describes as existing in his mythical city of Hygiea where perfect health is the dower of every man, woman, and child; where life lasts 100 years and falsehood, crime and unhappiness are unknown. We might hear our own sanitary shortcomings criticised by those people very much as we refer to the ignorance and superstitions of the past. We shudder when we read of the ravages of the Oriental plague, the black death and the sweating sickness. Before the Christian era the plague had its home in northern Africa, and it is said that over one million human beings were carried off by it in one epidemic. During the reign of Justinian, in the 6th century, that fearful disease first invaded Europe and prevailed with greater or less intensity for a period of 52 years. Gibbon in his "Decline and Fall" says that 10,000 persons died of it each day at Constantinople in the second year of its existence; that many cities of the East were left vacant, and that in the several districts of Italy the harvest and the vintage withered on the ground.

Probably a more lamentable picture of the devastation wrought by violated sanitary laws is not presented by history than occurred in the 14th century when the Black Death overran the world and carried off millions. Hecker estimates that 25 millions perished from its ravages. London was frequently visited by the plague, but in the 17th century occurred the great fire which checked a then prevailing epidemic, and since that time it has never visited that city. Quarantine and greater cleanliness in cities have kept the disease out of Europe during the past

100 years, but in oriental countries, where dirt is king, it still survives. A mere reference to these gigantic civil immolations is all that is possible.

There have also been many military epidemics of disease, so that the ancients recognized military hygiene as a necessary factor in army administration. Thucydides describes a pestilence which occurred in the army during the Peloponnesian War; the Roman and Carthaginian armies were ravaged in the days of Livy, and Pliny describes a disease resembling scurvy, from which the Roman army suffered severely in Germany. During the 7 years war 150,000 died of disease. In 1415 the army of Henry the 5th was deprived by dysentery of three-fourths of its effective force.* These figures convey some idea of the importance of sanitation to an army and show that hygiene runs on parallel lines with tactics and strategy.

As far back as history carries us we find that medical men were regarded as indispensable auxilliaries to the proper care of armies. Fifty years before the Trojan War, or 1242 years before Christ, Chiron and Esculapius, according to Greek poets, accompanied an expedition as surgeons. In the Trojan War, Machaon and Podilarius, two sons of Esculapius, took care of the wounded Greeks. Danrocedes was eminent as an army surgeon 600 years B. C., and being taken prisoner by the Persians, reduced the dislocated ankle of Darius, and cured his queen, Atosa, of supposed cancer, after the Egyptian physicians had failed.

We find, too, among the immortal names of modern history those of many military surgeons who made valuable and permanent additions to our knowledge. The surgical and sanitary arts owe much more to the genius and practical experience of army surgeons than might be supposed. The names of Paré, Larrey, Gale, Clowes, Woodall, Arceus, Heister, Longmore, Craik, Esmarch, and Guthrie, are a few of the many that might be mentioned in this category.

Paré served as a military surgeon for a third of a century. Dr. Fisher, in his History of Surgery, says, "The kings of France transmitted him to their successors as a legacy of the crown. Henry II., Francis II., Charles IX. and Henry III. each chose Paré as his physician and surgeon in chief. His personal history has the charm of romance and his works are almost as fascinating as a fairy tale."

* Rosse—Reference Hand Book Med. Sciences, Vol. I.

Larrey, who received the title of Baron at Wagram, was surgeon in chief of Napoleon's armies. In Egypt, at Aboukir and Alexandria, he displayed remarkable bravery. At Austerlitz he attended the wounded under the heaviest fire and at Eylau he saved many lives by his daring. At Esling, where food was scarce, he killed his own horse to make soup for the wounded. In Spain and Russia he extended the same care to the enemy's wounded as to his own. At the battle of Waterloo he was wounded and captured by the Prussians; about to be shot he was recognized by a Prussian surgeon, who took him to Blucher. The latter paroled him on account of his having saved his son's life. Napoleon in his will left him 100,000 francs and said, "If the army ever erects a monument it should be to Larrey." Two statues were raised to him. He was a most original investigator and the author of many valuable works and memoirs.

Jas. Craik was a surgeon in the Revolutionary Army, to whom Washington refers in his will, as, "my compatriot in arms, my old and intimate friend."

These brief references are made to illustrate the importance attached by great commanders and leaders, to the value of medical service in promoting the welfare of armies. Does it not follow as a necessary corollary that combatant officers should enlarge their range of usefulness by the possession of some correct elementary knowledge and full appreciation of the necessary practical means to combat the unsanitary influences that are apt to surround armies and paralyze their efficiency?

Another point of view tending at once to strengthen the above argument and to emphasize the value of hygiene as a factor in assuring the highest effectiveness of an army is afforded by a brief study of some results following the application of sanitary precautions. It is stated that 30,000 German troops at the beginning of the Franco-Prussian War were disabled by bad shoes. Surely the prevention of so grave a danger to the success of military operations should be largely in the hands of officers in immediate command.

In the Crimean War the losses by death were as follows:

French—killed by wounds, 20,240. By disease, 70,375
English—killed by wounds, 4,602. By disease, 16,211
Russians—killed by wounds, 30,000. By disease, 600,000

During the first winter the English lost all told 10,283; the French 10,934 although the French forces outnumbered the

English 4 to 1. The cause lay in the fact that the English sanitary arrangements were faulty in the extreme. The second winter through the instrumentality of great sanitary reforms adopted by the English on the strength of such frightful mortality, a most astonishing reversal of figures will be observed. The French lost 21,182 and the English only 551. We are told that medical recommendations were sought and enforced by the English, but that on the contrary the medical authorities of the French army were ignored and their recommendations discouraged as officious and presumptuous.

Under the highest development of Hygiene in Modern Warfare the Prussian army in 1866 lost 6427 by disease, and 4450 by wounds. In 1870 the same army lost a total of 40,382—28,202 by wounds, and 12,180 by disease, or less than half, a result due partly to briefness of operations but chiefly to the enforcement of enlightened sanitary regulations. In our own war about 110,000 were killed in battle or died of wounds, and about 199,000 died of disease, not a bad showing all things considered, but more unfavorable than it would have been had the magnificent sanitary organization been in existence early in the war that developed towards its close. There is hardly a doubt that should civil or foreign complications ever again embroil us in war our losses by diseases will be less than at any previous period of history, and the remote consequences of gunshot injuries will be greatly diminished by antiseptic surgery. As a significant fact bearing upon this point it might be mentioned in this connection that the sick rate in the army during our late war progressively diminished so that in the last year there were nearly 800 cases per 1000 less than in the first year; that is, in the 1st year, 2983 cases were reported to each thousand men; in the 2d year, 2696, and in the 3d, 2210. In the army to-day it is 1270, about.

As practical men we should heed the lessons of the past and be guided by them in dealing with the problems that confront us. Hygiene in war has been shown to be of immense importance. Hygiene in peace is relatively no less important. We have in our little army of to-day at least 500 soldiers constantly sick from causes which are preventable. Leaving out of consideration the question of humanity and looking at the matter from the utilitarian stand-point only, no one will deny that it would be a vast gain to the army and the saving of many dollars to the Government if this relatively large non-effective list could be rendered

serviceable and kept so by sanitary enforcements. It may be worth our while therefore to glance hurriedly at some of the practical means known to sanitary science which have been found to diminish or prevent disease, and which are easily understood and applied by non-medical persons.

The literature of the art and science of hygiene is enormous, embracing as it does within itself many coördinate sciences, such as drainage, plumbing, ventilation, heating, food, water, soil, clothing; the personal care of infancy, youth, manhood and old age. All expedients in fact that can cause, or assist in causing, the abolition or lessening of discomfort, pain, sickness, vice, crime or death; or can aid in securing health, virtue and happiness, are embraced within the immense range of its legitimate scope. Of course only the most elementary principles and a few of the most simple and approved regulations of sanitary science applicable to military life can be touched upon here.

We live at the bottom of an aerial sea that surrounds the earth to a depth of about fifty miles. Normally it contains oxygen, nitrogen, carbonic acid and watery vapor, under certain conditions, organic or inorganic impurities, or both, enter into its composition, and when present, even in small quantities, exert a deleterious effect upon health. Carbonic acid we know to be an impurity, but except in the air of dwellings, is as a very general rule not present in sufficient quantities to be injurious. We exhale carbonic acid from our lungs and appropriate oxygen, but in the out door air carbonic acid is present only in $\frac{1}{4\,0\,0}$ of 1%. The amount allowable in air for respiration is given by latest authorities as 1 part in $\frac{1}{1000}$. The body gives off also certain organic exhalations of a complex and poisonous character. These substances when condensed upon cold glass form a glutinous mass, perceptible sometimes on the furniture of dirty houses, and emitting a disagreeable and sickly odor. In the open air they undergo oxidation, forming carbonic acid, water and ammonia. Other impurities are engendered by the putrefaction or decay of organic waste and consist of poisonous gases and microscopic organisms of many varieties. Hence arises the necessity for cleanliness, ventilation and the destruction, disinfection or removal of excreta and organic refuse. Dr. Mann says that cleanliness is the life of an army. In his work on "Military Surgery," Prof. Hamilton states that General Keyes after his seven days' march to James River, called for his two best regiments to

post at Turkeys Island Bridge—and added: the 2d Rhode Island and 7th Mass. Dr. Hamilton says: "We could have anticipated his choice, for we had inspected their camps often and had learned from experience what General Keyes understood equally well, that troops whose persons and quarters were always clean never suffered their reputation to be soiled in battle."

The source of water drank by troops should be well looked to, because several diseases are disseminated by its pollution, notably typhoid fever and cholera. In camps or on the march the effort should always be made to supply troops with water from sources free from any suspicion of contamination. Some of the points to be looked to are sinks, drains, cesspools, decomposing organic matter, etc. The character of the soil also should be investigated; damp, rich ground being objectionable. For camps a high well drained site sheltered if possible from wind, should be selected. A bluff overlooking a marsh should be avoided, as malaria rises and would certainly prove a source of danger.

As to diet—frugality within the limits of satisfying every reasonable want and meeting the varied demands of nutrition is in broad terms the correct principle of subsisting troops. Luxury in any form can only exert a weakening effect upon soldierly traits. Our army ration is abundant, perhaps not too sumptuous, but with the recent additions to it is in every way sufficient. Certainly no government ever fed its troops as well as ours. One suggestion might be made regarding it. At our southern posts there is a diminished demand for the heat making elements of food and a correspondingly greater necessity for them at the more northerly stations. I am of the opinion that a modification of the ration based upon this principle would be an improvement.

The question as to the use of alcohol in the army has lost none of its interest by the abolition of the spirit ration. The philippics against the issue of grog advanced by teetotalers and reformers in the past have only been replaced by the problem of securing a rational and physiological use of alcohol in the service. For my part I believe that the solution of the question is to be reached by teaching men that alcohol taken into the system beyond a certain limited amount is a poison, and will produce with absolute certainty premature changes in the tissues which are the bases of brain failure, paralysis, Bright's disease, hobnailed liver, gastric catarrh, hardening of the spinal cord and a lot of other rapid and

horrible routes to the next world not necessary here to enumerate. The voice of wisdom is not always heeded, but men are more easily *led* than *driven*. Many years ago after reading Carpenter on Alcohol, and being very much impressed with the terrible indictment he had drawn against the use of the dangerous fluid, the subject came up in conversation with a party of officers, and as it seemed a favorable opportunity to disseminate a little sound information I quoted from Carpenter that alcohol interfered with the oxygenation of the blood, impaired the solidifiability of the fibrine and corrugated the tissues. I expected a degree of awe to be inspired equal to the profundity of the dicta but was startled by the audacity of the proposition made by one of the young men that we should "proceed to corrugate." Further deponent sayeth not, but as every member of that party is alive and in good health to-day, it is presumed that the short essay on temperance did more good than appeared from surface indications. Out of the thousands of experiments with alcohol on the health I will refer to but one. Anstie and Dupre found that a small amount, about 2 oz. in 24 hours, was destroyed in the process of nutrition and hence acted as a food. A quantity beyond this passed unchanged through the various channels, was thrown off as alcohol and hence acted as a poison. I think we can dismiss this question by accepting that as a safe working theory.

Many other subjects might consistently be touched upon but I fear my readers are weary and I will hasten to a conclusion by some brief remarks upon physical exercise.

A concrete definition of life has been given by Béchard as "organization in action." For the purpose of securing the highest perfection of this complex phenomenon physical movements are quite as necessary as attention to the other matters of which I have spoken. Just what forms of exercise are best to develop the qualities of the soldier may admit of some question. Drills, gymnastics, fencing, boxing, rowing, football, etc., all have their uses and some are open to criticism in some respects. Most modern authorities agree that athletics for health is the fundamental principle upon which physical training should be based, and that muscle culture for competitive feats of strength and endurance are pernicious, illogical and dangerous. A high degree of training is fraught with serious dangers, tending as it does to prematurely exhaust the vital forces and bring about early heart failure, muscular atrophy and physical prostration.

I recall the case of a young officer who could perform prodigies of strength but who died of heart failure during the course of a not severe fever from which he certainly would have recovered had his heart possessed a strength proportionate to his physique.

Sir Benjamin W. Richardson in a recent address points out that there is a distinct line of demarcation between athletics and common systematic exercise. The former is applicable only when competition comes into play and training is required for success. This training he says should have in view the development of certain qualities—precision, decision, presence of mind and endurance. These qualities are partly mental, partly physical, but their interrelation is very intimate. All are not of equal value ; mental endurance stands first. Mere physical accomplishment, great as it may be, is of little avail when not backed up by the strength of the commanding mind. Mere strong savagery cannot make either a nation or a man physically great : there must be that inborn faculty or quality, which though not measurable, nor to be weighed, nor in substance visible, becomes in action the essential virtue, the power that wins ; the same virtue that sustains the orator, the writer and the discoverer, and belongs in the highest degree to the highest civilization.

"It is unnecessary to pursue this line of thought farther, but it may be interesting to note that the conception here given, of physical exercise as a training for the mind no less than for the body, lay at the foundation of Plato's views of the real function of gymnastic exercises in the education of Greek youths. The toils and exercises of gymnastics, he says, if overstrained are likely to make men hard and brutal ; but if properly regulated, stimulate the spirited element of their nature, make them valiant and discipline their passions."

Asclepiades, the contemporary of Cæsar and the personal friend of Cicero, affirmed that nothing brought men nearer to the gods than the giving of health to their fellow creatures. That is as true to day as when it was spoken 2000 years ago. I venture to express the hope that there may be at no distant day a Society of Military Hygiene composed of all the officers of the army, whose object shall be to aid in improving the sanitary condition and hence the good repute and intelligence of the personnel of the army ; whose only condition of membership shall be to study, and by example, precept and authority, enforce the approved principles of Hygiene.

THE ARMY ARTILLERY RESERVE.

By Captain JAMES CHESTER, 3d U. S. Artillery.

WHILE modern campaigns have clearly demonstrated that the tactics of fifty years ago are out of date, and successful methods have been very generally copied with more or less exactness, doubts still exist in some conservative minds as to the true tactical interpretation of modern weapons and the magnitude of the changes which they demand. When the necessity of change is once admitted and its direction determined on, the extent to which it should be carried generally receives slim consideration. In consequence of this the pendulum is permitted to swing too far the other way. The methods of successful belligerents are accepted as perfect, and are copied in all their details as if they were the mandates of Mars himself. And so we find it proposed to drop the Army Artillery Reserve from the fighting organization of an army. The reason why is not apparent, unless it be because the German armies had no such organization, permanently designated as such, during the War of 1870–71. In other words, it has been copied from the German.

The tendency to copy successful military systems is probably as old as the art of war itself. Frederick the Great had his copyists, and no doubt many of them were astonished to find that *his* methods in *their* hands were lamentable failures. The same may be said in regard to Napoleon. The methods of these great masters were skilfully adapted to the conditions under which they operated. Changed conditions would have produced changed methods of procedure. If Napoleon had commanded an army as perfect and manageable as that which fell into the hands of Frederick the Great his column of attack would never have been heard of; and if Frederick had commanded an army of conscripts, he never would have manœuvred as he did. There is no cut and dried system, either of organization or tactics, which would be suitable to all sorts and conditions of men. The men and their weapons, qualified by the character of the adversary, determine, or ought to determine, the organization and tactics of the army.

No doubt the clumsy and ponderous lines of his adversaries suggested the flexible formations of Frederick, just as the abnormal extensions of his copyists suggested the column of attack to Napoleon. But genius such as these masters possessed is not to be found over once or twice in a century. The great mass of military practitioners are necessarily copyists.

But we do not intend to discuss the general question of recent changes, not because we believe in them all, but because we feel ourselves in a hopeless minority on the subject. For the same reason we speak with diffidence on the subject of this paper—The Army Artillery Reserve. Conservatism is akin to criminality in the eyes of would-be reformers, and positive heresy when they get control. Nevertheless, we shall endeavor to show, (1) That an Army Artillery Reserve is a necessity, and (2) That German commanders in 1870–71 thought so too.

It ought to be unnecessary to say that American armies operate under peculiar conditions, and that methods perfectly practicable in Europe may be altogether impracticable here. American topography and especially American roads are very different from those common in most parts of Europe, and the volunteer armies of America are as unlike European armies as Napoleon's troops were unlike those of Frederick the Great. For these reasons then, if for none other, it would be unwise to assume that the organization and tactics suitable to the one would be altogether applicable to the other. To be sure the American volunteer is intelligent and apt at anything, but green men under green masters, however apt and intelligent they may be, can hardly be expected to master a difficult trade in a few days. And a few days are sufficient to bring an enemy upon them. In these days of steam and electricity and vast standing armies and fleets, the blow follows the word like an echo, and there is no time to argue the pros and cons of organization. If false theories have found a lodgment in the military mind they must then be permitted to yield their legitimate fruit. Of course the Army Artillery Reserve is not a peace organization. It is created by order at the opening of a campaign. But if the idea prevails that it is an unnecessary organization, it will not be created, and the result may be disaster.

It is so easy to misinterpret other people's experience. The Franco-German War of 1870-71, is the fountain from which most military reformers draw their facts. They scan the organization

of the contending armies in that extraordinary struggle, hoping to find the keynote of success hidden there. Of course they damn the defeated belligerent, men, methods and material, simply because he was defeated, and in spite of the fact that he was the favorite at the beginning of the contest. His military system had long been the model for the world, and continued to be even when it had become rotten to the core. Were the military critics at fault in regard to it? If not, what was the cause of its decay? Candor compels us to say that a bungler got control of it. No machine, however perfect, can do good work in spite of its operator. The French army, as it was supposed to exist, was a splendid machine, and its sham operator was satisfied with its splendor and neglected its usefulness. And so the machine got rusty and unserviceable, and was destroyed. But it was not the mechanism but the manipulator that was to blame.

Let us take a look at it then, or rather its artillery contingent, at the beginning of the war. It consisted of the Guard, seven army corps, the Reserve Cavalry and the Reserve Artillery. Its artillery was distributed as follows:—

Guard	Corps	(3 Divisions)	had	36	guns	Divisional	and	24	guns	Corps Art'y.
I.	"	(4 Divisions)	"	48	"	"	"	48	"	" "
II.	"	(3 Divisions)	"	36	"	"	"	36	"	" "
III.	"	(3 Divisions)	"	48	"	"	"	48	"	" "
IV.	"	(3 Divisions)	"	36	"	"	"	36	"	" "
V.	"	(3 Divisions)	"	36	"	"	"	36	"	" "
VI.	"	(4 Divisions)	"	66	"	"	"	48	"	" "
VII.	"	(3 Divisions)	"	36	"	"	"	48	"	" "
Reserve Cavalry			"	30	"	"	"	—	"	" "

Army Artillery Reserve 96 guns.

It is apparent from the above table that the French organization, with some few exceptions, called for 12 guns to a division and that the Corps Artillery was equal to as many more. In addition there was an Army Artillery Reserve of 96 guns. It is proper to state that machine guns are not included in the table.

The German field armies in 1870 were three in number and consisted of the Guard and 12 army corps, the Wurtemberg Division, 6½ divisions of cavalry and a large contingent of artillery. The artillery was distributed as follows:

FIRST ARMY.

VII.	Corps	(2 Divisions)	48	guns	Divisional	and	36	guns	Corps	Artillery.
VIII.	"	(2 Divisions)	48	"	"	"	42	"	"	"
The Cavalry Division			6	"	"	"	—	"	"	"

SECOND ARMY.

Guard Corps	(2 Inf'y & 1 Cav. Div.)	48	guns	Divisional	and	42	guns	Corp Art'y
III. "	(2 Divisions)	48	"	"	"	36	"	" "
IV. "	(2 Divisions)	48	"	"	"	36	"	" "
IX. "	(2 Inf. & ½ Cav. Div.	60	"	"	"	30	"	" "
X. "	(2 Divisions)	48	"	"	"	36	"	" "
XII. "	(2 Inf. & 1 Cav. Div.)	54	"	"	"	42	"	" "
The Cavalry Division		18	"	"	"	—	"	" "

THIRD ARMY.

V. Corps	(2 Divisions)	48	guns	Divisional	and	36	guns	Corps Art'y
XI. "	(2 Divisions)	48	"	"	"	36	"	" "
I. Bav. "	(2 Inf. & ½ Cav. Div.)	54	"	"	"	42	"	" "
II. Bav. "	(2 Inf. & ½ Cav. Div.)	54	"	"	"	42	"	" "
Wurtemberg Division		54	"	"	"	—	"	" "

A glance at the above tables shows that the artillery contingent of the German armies was much greater than that of the French; that a much greater proportion of it was assigned to divisions; that about 40 per cent. of it constituted the Corps Artillery; and that there was no Army Artillery Reserve. This last feature is the one which specially interests us at present. We think it a defect and in any other army than the German it would have been a serious one. But the loyalty of German generals enabled them to borrow and lend their artillery in a way which could hardly be depended upon in other armies. The independent action of corps and division commanders in the German army is a feature which, as far as we know, is peculiar to that army, and has not been copied by anybody. And yet, without that feature, their peculiar organization, so far at least as the artillery is concerned, would have proved unworkable. This, we think, will become evident as we proceed. We shall not obscure the point at issue by the introduction of infantry statistics into the discussion. The question is, not the proportion of artillery, but its distribution; and the above tables—which are extracted from the official history by the Prussian General Staff—contain all the data necessary for our purpose.

Without entering into any detailed discussion of "The Attack" under modern conditions, it is sufficient to say here that all authorities and experience agree that the indispensable prelude thereto is an artillery duel, in which if the infantry attack is to become a possibility, the assailant's artillery destroys, drives off, or in some way silences the artillery of the assailed. To do this promptly and effectively, a preponderance of artillery at the

point of attack is an absolute necessity; and the greater the preponderance the more prompt and decisive will be the result.

And so the artillery attack should be sudden, unexpected and overwhelming. If an hour is wasted in this preliminary the infantry attack may become impossible. The preponderance may have passed to the other side. Much can be done by an active adversary in an hour. In these days of electric telegraphs on the battle-field, batteries may be assembled at the point attacked from six miles on either side or in rear of it in an hour. The artillery attack therefore, should be overwhelming, and its duration should be measured by minutes. It is assumed that these points are indisputable.

This being so, the attacking commander should have sufficient artillery under his immediate control to produce and maintain the necessary preponderance. The chances of war are just as likely to disable attacking as defending batteries, and the assailant must be prepared to replace disabled guns and batteries immediately and to maintain, if not to increase, his volume of fire. To do this with the necessary promptness, masses of artillery must be assembled at the point of attack and within supporting distance of it. The question then becomes, How can this be accomplished? This question can be answered in two ways. Either the commander must have a sufficient number of batteries specially set apart for the purpose and held under his immediate command; or he must utilize adjacent corps artillery. Napoleon practiced the first method; the Germans, in 1870–71, practiced the second. The batteries set apart, under the first method, are known as the Army Artillery Reserve. They are the thunderbolt with which the commanding general strikes the decisive blow. Fighting—serious fighting—and heavy cannonading from divisional artillery, may be going on along the entire line. This constitutes the screen behind which, and opposite the point selected for attack the Army Artillery Reserve forms up, and awaits orders. When the word is given, such batteries as are designated dash forward, and so increase the volume of fire at that point as to completely overpower and silence the enemy's guns. And then the infantry attack must proceed with vigor. Every minute is precious.

Of course the divisional artillery at the point of attack, which in common with the divisional artillery all along the line had taken part in the general bombardment, will be somewhat ex-

hausted and its ammunition chests empty. It will certainly be unfit to accompany the infantry attack. Still the attacking infantry must have artillery support. And so the Corps Artillery which has been wisely withheld during the artillery duel, dashes forward with the infantry of its own corps, and helps them to drive the attack home.

That infantry should be accompanied by artillery in the grand attack, even up to short ranges, is distinctly claimed by all authorities on the subject; and it will not be disputed that the batteries assigned to that important duty should be fresh and have full ammunition chests. The batteries which participated in the artillery duel are not likely to meet these requirements. Moreover they have still important work to do. The fire of the discomfited artillery must be kept down during the progress of the attack; the hostile infantry must be properly prepared for defeat; and the orderly arrival of reënforcements must be prevented. All this they can do without change of position; and being on commanding ground, they can continue firing over the heads of the attacking infantry until they arrive within assaulting distance of the enemy.

Such an attack is rational and orderly, and can be prepared without confusion, or risking inconvenient disclosure of designs. No battle can be planned in advance. The general must see the situation—perhaps feel it all along the line—before he determines the point of attack. Having made his selection, artillery concentrations are best made from the rear where the Artillery Reserve is held in waiting. To draw artillery from adjacent corps would be dangerous, not only because the corps would be weakened, but because the lateral movement of batteries if disclosed to the enemy—and it is almost impossible to hide such movements—would give him the cue which he needs to determine his actions. Under any circumstances such a method would be tedious and dangerous, and in our country it would often be impossible. So also, if the necessary batteries were drawn from the corps in reserve. Time would be lost; dissatisfaction would be produced; and the army reserve would be emasculated and rendered unfit to perform its functions. Hence we claim that the Army Artillery Reserve is a fighting organization which cannot be safely dispensed with.

Thus far we have considered the question of an Army Artillery Reserve from the standpoint of the assailant only. Is it

equally necessary to the defense? Assuming that an army occupies a chosen position and stands on the defensive, its divisional artillery occupies the key points on the line and is supported by the corps batteries within convenient distance. The corps batteries constitute the artillery reserve of the corps, and they have well defined functions. Should the divisional artillery need reënforcement or relief during the general engagement, the corps batteries stand ready to furnish it on the order of the corps commander. To maintain his lines he should have complete control of that important organization. The real point of attack is never known by the defender during the early stages of a battle. It is just as likely to be made on the front of one corps as another. He must be prepared at every point, and when the real attack discloses itself he must endeavor to meet it, as promptly as possible, gun for gun, and even better if he can. His divisional artillery will be promptly reënforced by the corps batteries, and other batteries will be moved up in support immediately. The assailant naturally forces the fighting. Guns, and even entire batteries will be disabled, and must be promptly replaced. And the replacing batteries must be obtained as in the case of the assailant. The Army Artillery Reserve is the only fountain from which they can be drawn with safety and dispatch. Posted as it ought to be, at some convenient point from which all the likely points of attack can be reached in the shortest possible time by moving straight or obliquely to the front, it stands ready to answer the call of the commanding general and ought to reach the point of attack more promptly and with less confusion than batteries from other parts of the line could possibly do, even if the unwisdom of weakening the line of battle were disregarded. So we maintain that an Army Artillery Reserve is a fighting organization as essential to the defense as to the attack.

In turning to the second part of our proposition, namely, that German commanders believed in an Army Artillery Reserve, we must remember three things: 1st, the independence permitted to German generals; 2d, the proportions of the artillery contingent; and 3d, that the German artillery like the infantry is territorial. In common with the corps to which it belongs it is recruited and instructed, and in time of peace, stationed within certain specified territorial limits. It is tied to its corps by stricter bonds than mere assignment. Germany had not yet become an empire. Baden artillery could not be assigned to the Wurtemberg Divis-

ion, nor Bavarian batteries to a Prussian corps. We should not be surprised then that, in the hasty mobilization of the armies, the artillery contingents, in every case, remained with their corps. Perhaps it would have been impolitic to order otherwise, even if there had been time. But there was no time. Mobilization and transportation to the frontier were the questions of the hour and the simplest and easiest, if not the only way was to let the batteries go with their corps.

Then in the earlier battles, such as Spicheren, Worth and Columbey-Nouilly, subordinate commanders seem to have taken the bit in their teeth, and commenced the battles and fought them to a finish in their own way. It would be a waste of time to look for any prepared plans of attack in these battles. It is not until we find the Second German Army face to face with the French at Gravelotte that we find anything about an Army Artillery Reserve. But there, on the eve of what was felt must be a great and decisive battle, we find Prince Frederick Charles, by general concession the best army commander they had, issuing the following order. "The corps artillery of the III. Corps will constitute the Army Artillery Reserve, and be exclusively under the orders of the Commanding General of the Army." (Der Deutsch-Franzosche Krieg, I. 682.) The III. Corps was designated as the general reserve that day, and, perhaps, could better spare its artillery than any other corps in the army; still few will contend that the corps deprived of its artillery continued as effective as before.

Further evidence on this point is unnecessary. The order above quoted refers to "The Army Artillery Reserve" as if it was a well known and necessary organization in the German army; and doubtless it would have had a conspicuous place in their fighting organization if it had not been for the reasons already stated. Its absence from that organization was not due to tactical considerations; but grew out of circumstances which have no existence in this country. Moreover the experiences of our own great war should not be hastily set aside.

PHYSICAL TRAINING OF THE AMERICAN SOLDIER.

By Lieut. E. L. BUTTS, 21st U. S. Infantry.

In charge of Gymnasium.

THE last six or seven years have been prolific of changes in the methods of internal administration in the U. S. Army. Modern improvements and modern ideas have replaced antiquated implements of war and antiquated customs. Innovations, some beneficial and some useless, have been introduced into the army organization. One innovation which is still in its infancy, and of which but little is known, in a practical sense, by the majority of the army, is the physical training of the soldier. We turn to the German and English armies for many of our new ideas in military science. We are commencing to follow their example in the physical training necessary for the enlisted man. In these armies such training is given great prominence and is pursued with vigor. In a few years our army will undoubtedly be on a similar footing.

A paper on the gymnastic training of the American soldier will not be complete without showing what progress has already been made in a systematic way, and by what means such progress has been brought about. In this connection it is necessary to frequently refer to myself, as the instructor in gymnastics at the recruiting depot (now a post) at Columbus Barracks, O., and to my work and experience in the Department for the past fifteen months. A large part of my report for the period ending June 30, 1894, will be found incorporated in this essay, and I will further state that I have not hesitated to take unto myself all credit in the work that can with due modesty be fairly assumed.

The first real inauguration of proper, systematic and permanent athletic training among the enlisted men of the service occurred at Columbus Barracks in November, 1893. An outline is given below of the work that was accomplished, while the Recruiting Depot was in existence. The instruction that was in vogue, upon my arrival at the depot, was in charge of non-commissioned officers. There was no systematic drill and the men were "turned loose" in the gymnasium, so to speak, and the results could not but be more harmful than beneficial.

The building assigned for the gymnasium, although designed for a barrack building and not what could be desired for a first class gymnasium, was by much labor on my part transformed into a fair gymnasium. However, it was far from what would be needed at a recruiting depot or at any large post. The facilities which exist in a properly equipped gymnasium were lacking and are still lacking. One of the most serious objections to the present gymnasium is that there are no facilities for bathing, it being impracticable to put in either a plunge or shower bath.

The Gymnastic Department received approximately fifty dollars per month from the Post Exchange for the building up of the gymnasium and for the necessary materials for outdoor exercise. From this source, together with the assistance of the Quartermaster's Department, facilities were obtained which insured a success of the physical training of the recruit. The number of recruits under instruction at any time ranged from two to five hundred. The number present on any day would average about three-fourths of the number under constant instruction,—a number of necessity being on guard, fatigue, etc. Each of the four companies received thirty-five minutes drill every morning, Saturday and Sunday excepted.

The system of instruction may be briefly outlined: Each company under instruction, averaging from fifty to a hundred men, required the presence of at least six competent assistant instructors. It was endeavored to divide the time so as to obtain the best results possible—the work being constantly varied to avoid monotony. In the gymnastic training it is necessary to employ the mind, as well as the body, and avoid that constant repetition which makes the work mechanical and tiresome. To illustrate the division of time, say ten or fifteen minutes were devoted to calisthenics or dumb bell exercise, the body being exercised from head to toe, and thus gradually getting the muscles into a condition to bear a more severe strain. It should be said here that all exercises in calisthenics, dumb bells, bar bells and Indian clubs, etc., where the entire company could be exercised together, were, whenever possible, taken charge of by the officer in charge in person.

The company was then divided into squads of not more than twelve men each and placed under charge of a squad leader—one of the assistant instructors—who put them through instruction on such apparatus as was directed. After about ten minutes

work on an apparatus, each squad was changed to some other apparatus; and as this work is what is called localized work and does not bring all the muscles into play, it was endeavored, when changing, to bring those muscles into play which had before been inactive. For example, if the squad had been employing the extensor muscles, it would be changed to an apparatus which bring the flexors into action. The last few minutes of the drill were spent in light exercise and it was the aim at the completion of the drill to leave the body in its normal condition. The recruit upon entering the gymnasium being in a normal condition should leave it in the same state.

The above division of time and the method of employing the same is but one illustration and simply presents the general principles.

It was necessary to change the character of the drill as much as possible. Variety in the physical training of soldiers is most important. The drill should seem a pleasure to them, rather than an arduous duty. During the warm weather more field was presented for furnishing this variety than during the cold months; in fact, exercise in the open air is always to be preferred to that indoors. I used methods such as giving them, in the open air, running and jumping, teaching them sprinting, pole vaulting, hurdling, putting the shot, throwing the hammer, etc., but always devoting time daily to well regulated calisthenics or dumb bell exercise.

In order to obtain some definite knowleds of the results of the work, I adopted the system of taking certain measurements and tests of the recruits upon their arrival at, and departure from the depot. From the data so obtained the table on next page has been prepared.

No measurements or tests were taken of any recruits who were present at the depot upon my arrival, and the table represents simply those whose arrival and departure took place while I was present at the depot. It should also be stated that quite a number of men, from sickness, special duty, etc., came to and left the depot without receiving any or but little gymnastic training. Of necessity the data in such cases was neglected. I confined myself to those men, who had been under more or less constant instruction for the average length of time, *i. e.*, three and a half months.

In obtaining the data in question great care was taken to

PHYSICAL MEASUREMENTS AND TESTS OF RECRUITS ARRIVING AT AND DEPARTING FROM COLUMBUS BARRACKS, O.

AVERAGE LENGTH OF TIME AT DEPOT 3½ MONTHS.	Measurements						Tests.					
	Weight in Pounds.	Chest.		Waist in inches.	Upper Arm, Inches.		Horizontal Bar, * Times.	Parallel Bar, † Times.	High Jump, Feet.		Broad Jump, Feet	
		Expansion in Inches.	Size when Inflated.		Natural.	Arm bent, Muscles set.			Standing.	Running.	Standing.	Running.
Average at arrival	145.07	2.804	36.53	30.18	10.4	12.05	3.87	3.61	2.76	3.32	6.50	9.50
Average at departure	147.88	3.410	37.18	29.19	10.85	12.66	7.08	7.23	3.12	3.71	7.22	10.99
Average gains	2.81	.606	.65		.44	.61	3.21	3.62	.36	.39	.72	1.49
Average losses				.99								
Largest meas. at arrival	179.	4.5	41.5	35.	12.	14.	9.	10.	3.5	4.5	9.	14.5
Largest meas. at departure	184.	6.	42.	33.	12.5	14.5	12.	14.	3.75	4.67	10.	15.
Smallest meas. at arrival	124.	1.5	32.	27.	9.	10.5	0.	0.	2.	2.58	4.	5.83
Smallest meas. at departure	126.	2.	33.	26.	9.25	11.	2.	1.	2.33	2.83	5.	7.00
Greatest gains	15.	2.	3.	2.	1.	1.75	9.	11.	1.	1.25	2.25	5.25
Greatest losses	13.5			4.5								

* Hanging on bar, with arms extended, the body is drawn upward until chin is on level with bar; then lower body until arms are again extended. Exercise to be repeated as often as possible.

† Resting on bar with arms extended, bend arms (fore and upper arms forming an angle of about forty-five degrees) then straighten the arms. Exercise to be repeated as often as possible.

insure accuracy, as the exact information of what progress was actually being made under the system given was of the most vital importance. Other measurements than those given in the table were taken and are now on record, but the most important ones are exhibited.

The change in weight which the recruits underwent varied somewhat with their physical condition upon arrival—those who gained being usually the youngest and who were growing and becoming more solid, the physical work not being so severe as to cause the loss which comes from hard training; on the other hand those who lost in weight were men with much superfluous flesh and large stomachs. In such cases loss of weight was usually accompanied by loss in stomach; for example, the greatest loss in weight, *i. e.*, thirteen and a half pounds was accompanied by loss of several inches around the stomach.

The average gain in chest expansion is shown to be .606 inches. It is an error to state that large expansion represents conclusively fine quality of lungs or ability to endure. In fact, a study of such cases proves that only a very general estimate can be arrived at from such data. Many men of medium expansion are found to possess twice the endurance of men of larger expansion. Some men have not acquired that "knack" of fully expanding, which comes from practice. One man from the conformation of his body may be able to expand much more than another of equal lung power. However, this increase as shown by the table rather indicates this: That these men learned to use their lungs, as they did their muscles, more freely, and acquired to a certain extent the art of abdominal breathing; and whereas, the lung power may have been inappreciably larger than upon arrival, the exercise underwent, brought out, so to speak, that power which before remained latent. Too much attention cannot be devoted to this part of a soldier's education. It is most essential that the lungs be used properly especially by a soldier, who may be called upon to perform arduous duties in the field, requiring long and continued exercise or again that which is short and violent.

The waist presents a decrease of .99 inches. This is as it should be; a large stomach is an enemy to activity and may become a constant menace to continued health and it is a dead weight which necessitates the athlete to retire from the field of contest.

The biceps natural give an increase of .44 inches and with muscles set .61 inches. I find that the largest gains were made by those recruits, who at arrival were but indifferently developed but who had the athletic build, were attentive and earnest in the daily drill and devoted time regularly during the hours for voluntary exercise.

The tests present quite accurately the real improvement made. The conditions at departure and arrival were the same so far as relates to the tests ; the dress usually being the regulation white or blue shirt, uniform trousers and barrack shoes. It would be preferable to have the men in the gymnasium use a regular gymnasium shoe or an ordinary canvas tennis shoe in place of the barrack shoe. Authority for the issue of a suitable shoe by the Quartermaster's Department should be granted.

I found in the majority of cases that the recruits at enlistment presented more strength than activity. The knowledge of how to use their strength was lacking; and those from farms, shops, etc., where the muscles were made "heavy" rather than exercised were found to want that pliability in their muscles which accompanies activity and grace. Consequently many men well muscled, were unable to jump any appreciable distance either in height or width or run any distance without the greatest fatigue. Their muscles were rigid and set and like a machine without oil, all work was accomplished with the greatest expenditure of energy. Upon this class of material not a little time had to be spent in order to limber their joints and render easy and pliable their muscles by light and continued exercise.

The large average increase in the horizontal and parallel bar tests and in the jumping is shown by the table.

The record of each recruit's training is now on file in the post gymnasium.

A system of instruction similar to the above has now been established among the companies of the 17th Infantry stationed at Columbus Barracks. The men have taken very kindly to the drill and many have displayed much zeal in becoming as proficient gymnasts as possible during the few months instruction. I find it impracticable to give the soldiers of thirty-five or forty years and over any but the light exercises, and a number of these old soldiers do not even relish the light exercises. The old soldier kick, against any innovation in the usual tenor of his life, is apparent in this work. However, it is more satisfactory to instruct

men who are permanently at the post. Time is given to note the progress made and the improvement in physique. More variety of exercises can be given; advanced work can be substituted for the simpler exercise. These men are arranged into squads according to proficiency; the strongest and most active being in the highest squad, and the weakest and most awkward in the lowest. In this way the exercise needed to make the enduring soldier can be meted out to the men in a way to obtain the best possible results. One set of men may need development of muscular strength rather than grace and agility; whereas another set may have the awkward strength of the street laborer and still be incapable of a graceful movement.

The physical training of the soldier should be such that he may accomplish all the trials of a march, skirmish, of all arduous duties, with the expenditure of as little energy as possible. To do this every muscle must be under as perfect control as the individual can make it. Such a state can only be arrived at by proper gymnastic training. In this connection I take the liberty of quoting from Mr. Herman Koehler, master of the sword at West Point, whose valuable advice I sought upon my detail here and who is considered by all instructors in gymnasiums as one of the best authorities on physical culture in this country and certainly one of the most successful instructors.

"A course of physical training for the recruit or soldier in order that it may be as thorough and beneficial as possible, aims to attain the following quintuple object: 1st. The improvement of the physique and general carriage. 2d. The development of muscular strength whereby bodily health is promoted which will enable the soldier, who is liable at any and at all times to be called upon to exchange the comforts of garrison life for the hardships of a campaign, to better endure these hardships. 3d. The development of agility, activity and grace, all essential soldierly qualities. 4th. The development of precision and accuracy; a soldier who has been taught to be accurate and precise in the execution of the exercises in the gymnasium will develop this same precision and exactness in the discharge of all his duties. Nothing so disciplines a man as properly directed gymnastics. 5th. To enable him to make his muscles subservient to his will. The importance of this education of mind over matter is one of the essential features of gymnastics."

The above is a clear, able, and concise statement of the ob-

jects which an instructor should seek to gain in his course of instruction. In accordance with a circular published from the Department of the East, certain officers have within the past few months been placed in charge of calisthenic instruction at the posts where they have been serving. What progress has been made in these cases I have no means of knowing, but I have received requests from several to furnish them with full data on the subject. This is a somewhat difficult matter to do, and I take this opportunity of proffering certain suggestions to any young officer who, like myself, may be detailed on such work. The garrison at a post, being turned over to an officer for instruction in gymnastics it is first necessary to see what facilities for the work exist at the post. If there be a building that can possibly be turned into a gymnasium it should be utilized. However, no such building nor even apparatus is essential in the beginning. At many posts in the South the men can be exercised out of doors a great part of the year. At the Northern posts, for want of a gymnasium, the company barracks would have to be utilized.

I will take the case of an eight company post. Two companies could be drilled at a time, the number of men present at any drill would probably average sixty or seventy men. For this number of men at least four assistants would be required. At a very large garrison a second officer might be detailed to assist the officer in charge. These several assistants should, if possible, be all non-commissioned officers. They should be clothed with the vestige of authority; for each one to be in an office of authority is of as much importance as to have a regular drill instructor a non-commissioned officer. Especially is this so when the regular gymnasium work has been entered upon.

A soldier to be a capable instructor in gymnastics must not merely be a successful athlete; he must be just as efficient as a drill instructor; he must be a man of decision and will to enforce discipline, demand prompt obedience and command the respect of the men under him. Even more than an ordinary drill instructor must he understand the peculiarities and feelings of the men under him, as their characters and disposition are brought forward much more prominently by the variety of gymnastic drill than by the drill in the school of the soldier. Discipline in gymnastics is as essential as in the drill of the soldier in arms.

With large bodies of men, if satisfactory results are desired, the instructor must necessarily carefully instruct and train his

corps of assistants. To return to the case referred to for illustration, I would endeavor to have the drill about thirty-five or forty minutes in duration—to take place in the morning commencing an hour or two after breakfast. Application should be at once made for the appropriation by the post exchange of sufficient funds for the purchase of dumb bells, and then bar bells and Indian clubs—especially dumb bells, weighing, I should say, four pounds. It may be difficult at first to obtain any funds from some exchanges. In fact an officer will have to fight hard to get the money, but with a little perseverance, he ought to gain his point. It is more essential that the soldier take exercise than live on a great variety of food. Exercise will give him a wholesome appetite and his rations will be relished. Having obtained the needed equipment the drill should be divided so as to afford a pleasant variety.

The principal movements in the Manual of Calisthenics published for the use of the army should be used. Dumb bells of four pounds are recommended, as for the average soldier I consider that about the proper weight to attain the best results. The dumb bells may be used with most of the movements laid down in Koehler's Manual. Any good manual of dumb bell exercise which will bring into play all the muscles of the body could be used.

The light weight dumb bell exercises prescribed by the renowned Sandow in his book will be found most valuable. Most of the exercises are included in Koehler's exercises. A manual for bar bell drill is also used. This is similar to the bar bell manual used in the Y. M. C. A. gymnasiums in this country and was compiled by an enlisted man of the 19th Infantry. The rifle can be substituted for the bar bell in the case of men of strong physique. However, the bar bell drill is more useful for making the joints limber, the body supple and the muscles more pliable and active. For the development of real muscular strength the dumb bell takes precedence. It would be comparatively easy to compile manuals of calisthenics, dumb bell exercise and bar bell drill for the use of the army, but this would be simply going over old ground and the probability is that each individual instructor would prefer to go ahead on his own lines so long as the same end would be reached. However, there is one point that I would forcibly impress upon all new instructors in gymnasium work. *Impress upon the men that they must put their*

whole mind into the work, the muscles must feel the exertion and receive the full benefit of the toning and building up process. This is the fundamental principle of all successful physical training. Let the muscles be so used that the exercise is felt. The drill must not be indifferent, every man must set his muscles and concentrate his will power in the work.

The above point is one that is usually overlooked by beginners, it should be held paramount to every other factor. By this concentration of the will power, it will be found that each muscle will perform its own function readily and easily, and a person will soon be able to flick or work most of the voluntary muscles while the body as a whole remains quiet. This is exercise in itself. In all the light work given to the men after they have become somewhat advanced the exercise should be continued until the muscles feel tired and ache perceptibly. This is not an over exertion of the muscles but a proper use of them and will build up, especially, that part of the muscular system not used in the ordinary vocations of life.

The principles of abdominal breathing should be taught the men, and they made to use it in the exercises—especially running. Much attention can be profitably paid to this part of a soldier's physical education. The run at first should be of only two or three minutes duration and without any accoutrements. It can then be increased, say a half minute to a minute each day, until the men are able to run several miles with but little fatigue. As the men become proficient in running without accoutrements, the rifle should be given them and they made to carry it in every position which does not interfere with the run. After this the knapsacks could be added, although the carrying of very heavy loads in the knapsack is not advised except at rare intervals. Encumbered with the rifle and knapsack the soldier should be taught to pass obstacles, such as leaping ditches, scaling fences and walls and the methods for assisting one another in passing such obstacles. I would recommend a study of Maclaren's book, written for the English army for such work as the above.

The above suggestions to new instructors may assist them somewhat in their work.

An officer detailed in this department need not hold himself down to any precise rules. Let him consider that he has a large body of men, some weak, some strong, others awkward and others more or less graceful. He should exercise his own judg-

ment in instructing such a body of men. The work deserves time and study. For the actual development of a man's muscular system probably every result could be arrived at by the use of dumb bells, bar bells and the calisthenics, provided the will power is concentrated on the work and all exercises performed daily with energy and dash, and the most rigid attention paid to the minutest details of every exercise.

The physical culture of the soldier in the U. S. Army being at present in its initial stage it is essential that every means be employed to gain the interest of both officers and enlisted men in order that the establishment of gymnastic drill as a daily duty throughout the entire army may be consummated in as short a time as possible. Athletic exhibitions have been given at the Columbus Barracks gymnasium which presented to the officers and to the public the general system of a soldier's training and the results attendant upon such training. All encouragement should be offered to such a departure. It enables the skillful athlete to display his prowess and to have his excellence recognized; instills in the men a spirit of emulation and is the means of spreading an interest in athletics throughout the entire army.

I would also suggest the inauguration of regular field day sports where victors are materially rewarded. The history of all athletes show that nothing will so soon establish them as a permanency in an organization as the spirit of contest. There have been two Field Days at Columbus Barracks. The initial Field Day was instituted on Thanksgiving Day of 1893. There were but three or four athletic contests as the prizes were few, the contestants untrained, and the proper facilities lacking. The difference between this Field Day and that which occurred on the Fourth of July last, 1894, was very marked. The records of the purely athletic events showed splendid material and proper training.

Every post of any size in the army should establish an annual field day. Prizes should be awarded by the Exchange and it will be found in the case of a post near a city that the large firms of whom the garrison is a patron, will be only too willing to offer valuable prizes. To my mind there should be authorized by the War Department a Grand Annual Army Field Day, which should not rank in importance below the Army Rifle Competition, in fact should be concurrent with it. A field day similar to the Great Annual Intercollegiate contests, in which both officers and enlisted men could participate, to which one or two or more

contestants could go from almost every post in the army, where prizes could be offered and where the contests could be by individual, by regiment, or by branch of the service. Now that the regiments are being concentrated, it would be an easy matter for each regiment to send a team to take part in a department contest. The contest could be partly military. The details of such a scheme would be simple. While the idea just put forth may seem visionary and its application impracticable, yet I cannot myself so regard it, and it presents itself to me as a reality, which needs but time to bring about, and I do not hesitate to say that the next few years will probably see the organization of a Department of Gymnastics such as now exists in the English army.

With systematic instruction at a post such national sports as base ball and foot ball can be indulged in by the officers and men with the greatest benefit. These sports can even be made a part of the daily drill, and there will be found a high degree of excellence to result, as proper and systematic methods of training can be enforced.

It is not necessary to state how necessary is proper physical training for men in actual field service. To all who have commanded men in the field the necessity of thorough training is but too well known. But I would invite attention to a few of the beneficial results, noticeable while a garrison is at a post during the intervals of peace. Since gymnastic training was made a daily duty at Columbus Barracks, the time which many soldiers had formerly spent away from the post, in the city, was employed at home in the gymnasium, on the ball field, training for events to come, and those who did not share actively in the exercises were interested spectators. During the six months ending June 30, 1893, there were sixty-seven desertions, during the six months ending December 31, 1893, twenty-three desertions, and during the six months ending June 30, 1894, but ten desertions. This decrease was almost wholly due to the athletics carried on at the depot. The men were interested and therefore contented, and many a man, whom idleness would have brought to drinking and gambling, spent his time at some sport which he keenly enjoyed.

The Fourth of July Field Day, 1894, kept almost every soldier at the barracks. Between one and two hundred shared actively in the contests, and the city of Columbus sent over five thousand people, on a threatening day, as spectators, and several thousand

more were unable to reach the barracks on account of lack of transportation from the city railway.

The above facts are mentioned simply to illustrate how beneficial can be made the influence of properly directed athletics. Furthermore, we obtain a body of men who are capable of withstanding the hardships and deprivations of field service; we obtain, or rather make, men who are clear headed and active, who gain reliance in themselves and upon whom we can rely. As a player on the ball field learns that his play must be subservient to and united with that of the whole team, and yet that success often depends upon his quick and prompt individual action, so will he understand as a skirmisher in the field that his will must be subservient to the united action of the company, and still that his individuality, which, at critical moments demands quickness of apprehension and action, must be retained. An able player on the ball field will not forget his tactics on a field of battle, and an able captain of a ball team will make an abler captain in the deadlier game of war.

I have stated much in this essay which may not be new to many officers in the service, but there may be some practical suggestions in it which will be of benefit. It is not beneath the officers of our service to give time to athletics and to join with the men in their games and contests. I have yet to notice any attempt at familiarity, any want of respect on the part of any soldier or recruit, or any necessity for an officer to bend from the dignified position which his status renders necessary toward the enlisted man. More attention should be paid by our officers to the training of the body, not only for the preservation of health, but from a sense of duty in order to be fit at all times to withstand the rigors of a campaign.

Although the rank and file may undergo the severest physical tests, yet the officer like the private must endure the hardships of the camp, inclemency of weather, disease, and all the accompaniments of a war. On the field of battle he should possess that sound physical health essential to a clear judgment and an active mind. In the present age he is not, it is true, called upon, like the Old Roman, to be the foremost in the fight, dealing death blows to scores and snatching victory from defeat by his personal prowess; but he, who, pushed into the midst of excitement and peril, would exercise quickness of apprehension, soundness of judgment, would analyze the situation and come to a correct con-

clusion, would carry out a decision unimpressed by the disturbing influences of danger, must have both physical and mental faculties at their very best.

For successful command in the field mind and body with all their powers in full force are needed, or genius without health, and the energy which springs from health, fails like genius without common sense, like common sense without genius, like genius without training, or training without genius. The more one studies the grand campaign of 1815 in Belgium the more is one willingly convinced that had Napoleon then been physically the man he was at Rivoli he would have defeated Wellington at Waterloo, as he had just defeated Blucher at Ligny. While no doubt it is needless for me to point out how essential is the proper bodily training of our officers and men, yet, I cannot but endeavor to impress upon all who are interested in army welfare that this proper physical training does not now exist throughout the army. And where does a corporation of individuals exist that can control pure athletics so easily, can restrain all abuses and excesses and direct all contests in a proper channel and to a proper end, as can the army?

The material in the army for the making of athletes is of the highest order. In many cases it is not required first to produce the muscular strength, as is frequently the case with young men entering college. The average recruit comes to us well developed in his uncouth way, and the opportunity of moulding him into a magnificent specimen of physical manhood should not be lost.

The army need have no scruple nor hesitancy in making the athletic training one of its most important factors. The subject is one which has demanded the greatest attention from all nations of antiquity and of modern times. In former times the intervals of peace are seen to have been utilized in arranging and carrying to a successful termination those games and tournaments which are immortalized in the songs of poets; that training was found indispensable to the maintenance of a formidable army; such training notwithstanding the changes in mode of warfare is just as essential now. As athletics were considered a most necessary part of education and even held as a sacred rite by the armies of old, so now, it is our bounden duty to use every energy during the quiet intervals of peace to so train our men that they can be at once transformed into hardened veterans upon whom the safety of a nation can depend.

RESULTS OF EXPERIMENTAL FIRING WITH THE SERVICE RIFLE (MODEL 1894).

By Captain W. M. BLACK, U. S. Corps of Engineers.

THE following record shows the results of the experimental firing at Willet's Point, N. Y., with the service rifle, model of 1894 (Krag Jorgensen), and the service ammunition, against the various materials used for field fortifications.

The rifle was issued from the Springfield Arsenal. The ammunition was from the Frankford Arsenal and was in boxes marked "August 22, 1894." "Velocity at 53′, 1971 feet." "Powder Peyton." The range for all of the shots was 50 yards. The line of sight was approximately horizontal and perpendicular to the targets. The rifle was fired from the shoulder over a rest.

Date.	Material.	Shot	Penetration.	Remarks.
Nov. 7.	Moist sharp building sand.	1	13″	
		2	8″	
		3	11″	
		4	11½″	
		5	16½″	Near surface.
		6	13″	
		7	10″	
Nov. 12.	Loam, containing a few stones.	1	19¼″	
		2	18″	Bullet also passed through 1″ of pine.
Nov. 15.	Moist.	3	29″	
		4	24″	
		5	24″	
		6	29″	
		7	12″	Apparently had struck a stone.
		8	18″	Broken into small pieces, scattered along from 12″ to 18″.
		9	18″	
		10	17½″	Bullet indented at point, deflected and turned sideways.
Nov. 15.	Sandbags filled with loam. Size 11″ × 23″ × 5″.	1	11½″	Laid as header.
		2	13½″	Laid as stretcher.
		3	16½″	Through one stretcher and 3½″ into a second.

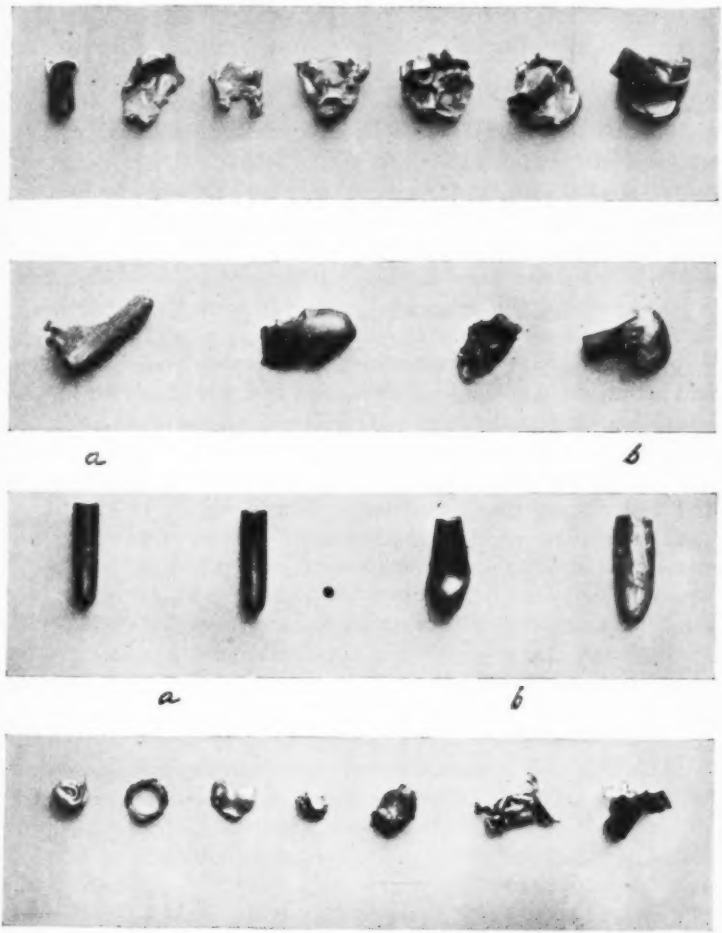
Date.	Material.	Shot.	Penetration.	Remarks.
Nov. 7.	Brush fascine, 9″ diam.	1	Through and 5″ into sand.	Pierced 7 pieces, amounting to about 7′ of solid wood.
Nov. 16.		2	Through & into loam.	Pierced about 9″ of solid wood.
Nov. 15.	Brush gabion filled with loam.	1	Through 2½′ sticks and 13″ into earth.	
Nov. 12.		2	17″ into earth.	
Nov. 12.	Hoop iron gabion filled with loam.	1	Through hoop iron and 9¼″ into loam.	
		2	Through iron, ½″ of oak, and 12″ into loam.	
		3	Through iron and 10″ into loam.	
Nov. 15.		4	Through 1″ of oak and 12″ into loam.	
Nov. 16.	Clear white pine in 1½″ boards, in contact.	1	39″	Bullet deflected and lost.
		2	49″	And 1¼″ into concrete.
		3	43″	
Nov. 19.		4	42½″	
		5	42½″	
Nov. 19.	Same, spaced 1″ apart.	1	Through 24	Slabs, and ½″ into concrete.
		2	" 26	" and half through 27th.
		3	" 25	" bullet deflected into top of 26th and out.
		4	" 26	Slabs, bullet deflected and out.
Nov. 7.	Same in pieces 1⅜″ thick spaced 4½″ apart.	1	Three sticks.	Pierced cleanly. The 4th stick was bruised by the bullet which had become distorted into a mushroom shape.
Nov. 16.	Oak in 1″ slabs, placed in contact.	1	23¼″	
		2	25½″	
		3	16½″	Bullet deflected and out.
		4	20″	" " " "

DATE.	MATERIAL.	SHOT.	PENETRATION.	REMARKS.
Nov. 16.		5	19½″	Passed through hard knot in second slab.
Nov. 16.	Four 5-32″ iron plates, in contact and backed by heavy timber.	1	1st plate.	Clean hole, 7-16″ diameter. Radial lines of melted lead on back of 1st and face of 2d plate.
			2d "	Dented 1-16″ deep. Cracked in dent.
			3d "	Dented ¼″ deep. Cracked in dent.
			4th "	Dented ¼″ deep.
		2	1st "	Clean hole, 7-16″ in diameter.
			2d "	Dented 9-16″ deep and cracked in dent.
			3d "	Dented ½″ deep and cracked in dent.
			4th "	Dented 6-16″ deep.
	Same, spaced ½″ apart.	1	1st plate.	Clean hole ⅜″ diameter.
			2d "	This plate was smaller than the others and the bullet passed beneath it.
			3d "	Jagged irregular hole, ⅞″ diameter. Iron entirely broken out.
			4th "	Jagged irregular hole, 1⅓″ diameter. Iron partly torn away and partly bent back.
		2	1st "	Clear round hole, 7-16″ diameter.
			2d "	Clear round hole, ⅜″ diameter.
			3d "	Clear hole, 13-16″ diameter, widened horizontally 1⅜″ by curling back of iron on one side.
			4th "	Star shaped hole, iron bent back, making clear opening ½″ diameter. Dent in face of plate 1½″ diameter. Traces of melted lead around edges of hole.
Nov. 19.	Iron plate, 1-2″ thick, backed with timber.	1		Penetration of about 5-32″. Bulge on back.
		2		Penetration of about 5-32″. Bulge on back.

DATE.	MATERIAL.	SHOT.	PENETRATION.	REMARKS.
Nov. 19.	5 plates No. 14 mild steel [3-32″], spaced ½″ apart.	1	1st plate.	Clean round hole, ⅜″ diameter.
			2d "	Round hole ¾″ diameter, plate dented for diameter of 1¼″.
			3d "	Round hole ⅞″ diam. Dent 1¾″ diam. Traces of melted lead around hole.
			4th "	Plate dented for diameter of 2″. In centre of dent ring of melted lead of 1⅛″ and ¾″ outer and inner diam. Dent 11-16″ deep. Cracked ¼″ wide at bottom.
			5th "	Untouched.
		2	1st "	Similar to first shot.
			2d "	" " " "
			3d "	" " " "
			4th "	Similar to first shot except that plate was not cracked and that bullet was welded fast to plate.
			5th "	Untouched.
Nov. 19.	3 plates ⅛″ mild steel, spaced ½″ apart.	1	1st plate.	Clean hole, 7-16″ diameter.
			2d "	Jagged hole near edge of plate.
			3d "	Slight dent. The bullet passed through three ½″ pine sticks in front of and between the plates.
		2		Same result as first.
		3		Missed first plate, 2d and 3d pierced.
		4	1st "	Clean hole 7-16″ diam.
			2d "	Round hole 11-16″ diameter. Edges turned back and covered with melted lead.
			3d "	Irregular, jagged hole 1″ diam. Points turned back and splashed with melted lead.
				Pieces of the bullets of the 3d and 4th shots were found in the rear of the plates, in fragments of the case and globules of lead.

The bullets which were recovered from the wood were but very slightly deformed. Those found in the sand were in the shape of a mushroom, of which the empty case formed the stem. The head of the mushroom was about ⅝″ in diameter. The portions of the case recovered were always empty of lead. The sand

immediately around the bullets showed evidence of the action of heat, the moisture being dried out. The bullets recovered from the loam were the most torn to pieces. This and the relatively



No. 1. Bullets recovered from sand.
No 2 " " " loam. *a.* shot No 10. *b* shot No. 1. Nov. 7 through pine spaced 4½".
No 3. *a.* " " " timber. *b.* bullets which had passed through pine and into concrete.
No. 4. Fragments of bullets which had passed through steel plates.
From Capt. Black's report of December 1, 1894.

small penetration in loam would seem to indicate a lack of sufficient toughness in the bullets and a lack of cohesion between the lead and the case. The old model service rifle and ammunition gave a penetration of 21″ into loam and about 18″ into solid pine, for the same range.

REMARKS ON THE PRESENT SYSTEM OF CONDUCTING THE BATTERY COMPETITIONS FOR GUNNERS.

By First Lieut. O. E. WOOD, 5th U. S. Artillery.

THE general order of the War Department of 1890 "to encourage excellency in gunnery" was a step in the right direction.

Anything that tends to advance the professional knowledge and practical application of the rank and file of the artillery is an improvement over the former condition of things.

Prior to 1881 the artillery soldier in our army was a nondescript—a Jack at all trades and good at none. He was expected to be a good infantryman as well as an artillerist.

The artillery target practice of those days was performed in a desultory kind of way by a sort of "rule of thumb," and was by no means universal for all of the artillery. In fact it was exceptional that artillery troops had artillery practice.

But with 1881 a new era was established, and, although the amount of practice was very limited, the change from the former humdrum work of the artilleryman was welcome and a new interest was awakened.

The War Department scheme of 1890 has now been in operation in the artillery for four years and the time seems ripe for a discussion as to whether this system is really benefitting the artillery. It is believed that several modifications are needed in order to produce better results.

The competitors for gunners are required to show their knowledge:

"1st. In setting and reading verniers in all angle measuring instruments used in connection with artillery practice. The maximum mark given is 8."

An accurate reading of angles and a knowledge of the values

of the smallest reading of verniers is an absolute necessity. The maximum mark is too small. It should be 10.

"2d. In the service and nomenclature of all pieces available for instruction. Maximum mark 8."

This mark is a fair value.

"3d. In judging distance of stationary objects. Maximum mark 10."

This is too high for the reason that the harbors have been plotted so that the distances to stationary objects within range of vision are all known and have long ere this been committed to memory. The maximum mark should be but 7.

"4th. In judging distance of moving objects. Maximum mark 14."

This is too high for the reason that the distance to a steamer or ship passing up or down the harbor can be quickly estimated where the distances to buoys and points of land are already known. The maximum mark should be but 10.

"5th. In judging speed of vessels. Maximum mark 8."

This mark should be increased to 10 for the reason that it is fully as necessary to properly estimate the speed of a vessel as to know its distance.

"6th. In judging velocity of wind. Maximum mark 7."

This mark is a fair value.

"7th. In laying guns accurately as to elevation and direction. Maximum mark 20."

This to my mind is the most important of all qualifications for gunners, and a proper importance has been given to the maximum mark.

"8th. In cordage, blocks and tackles, and their use in mechanical manœuvres. Maximum mark 5."

This mark is too small for obvious reasons, it should be 8.

"9th. Soldiery conduct. Maximum mark 20."

The general soldiery conduct has a great bearing on the efficiency of a gunner, and is properly determined by his battery commander.

The changes proposed would give the same total result of 100.

With reference to whom shall constitute the regimental board. The order says:

"In each regiment, the competitions will be conducted by a board of three officers of the regiment, to be appointed by the regimental commander, subject to the approval of the division

commander, with reference to their special qualifications for this duty."

It is reasonable to assume that every officer of the regiment is competent to perform the duties, but owing to many causes, the selection is necessarily limited, and governed rather by expediency than by the existence of the "special qualifications" which are deemed necessary. This is to be regretted, but it is believed that the duties required of the board have thus far been performed in a thoroughly conscientious manner according to their ability.

In our artillery regiment the board has each year been composed of one captain and two lieutenants, but it is at least doubtful whether better results could not be obtained by the selection of three lieutenants. It is human to err, and prejudice often governs our actions, though it may be exerted unconsciously. The captain of a battery is the "head instructor" of his men, and they become accustomed to his methods, and if he is a member of the regimental board, unconsciously his presence influences them, and they have in consequence a feeling of security as to the result, and they seldom "get rattled" on examination. Another thing—the captain is naturally desirous that his own battery should have the largest number of gunners, and if I know anything of human nature, it is utterly impossible to dismiss this from his mind.

Unconsciously, perhaps, this will influence him, and no matter how well he tries to be impartial, the results will always be questioned in the minds of the other captains, though it may never be expressed. The other extreme—unusual severity in conducting his part of the examination will reflect to the disadvantage of his own battery.

The order referred to goes on to say: "Upon the termination of each battery contest, the regimental board will classify the competitors as follows:

"Those who may have received 75 per cent. of the general aggregate maximum figure of merit will be classified as 'gunners,' of whom there may be three classes in each battery.

"The first class shall be the five men receiving the highest percentage of the aggregate figure of merit. The second class should be the ten receiving the next highest percentage of this aggregate. All others who qualify for classification will constitute the third class."

We will start on the basis that it is an absolute necessity for each gunner to receive at least 75 per cent.—but why *limit* the number of first class gunners to the five men who have the highest percentage? *Every* competitor who qualifies should be entitled to the distinction of being a first class gunner. Why should there be but five first class gunners in each battery?

It is *possible* that of 25 men of one battery who are competitors *all* may receive 100 per cent. It is equally possible that of 25 men of another battery all may receive 75 per cent.

Is it just or fair in any sense that the first five men of this second battery should be called first class gunners when each one received but 75 per cent. of the required figure of merit? Again—is it just or fair that the last ten men of the first battery should be called third class gunners when each one received the maximum mark of 100 per cent.?

Such results as these, which are absolutely possible, are enough to discourage one with the fairness of that part of "the system."

The sooner this is changed, the better will be the results.

I would propose: *First.* That all competitors who receive 95 per cent. of the aggregate mark should be designated as first class gunners. *Second.* Those who receive 85 per cent. and less than 95 per cent. to be second class gunners. *Third.* All others who receive 75 per cent. and less than 85 per cent. to be third class gunners.

It may be interesting to note the results of this year's battery competition for gunners in one of the artillery regiments.

Over 13 per cent. of the candidates who presented themselves failed to receive the 75 per cent. required for the lowest class of gunners.

The cause that produced so large a percentage of failures is undoubtedly the lack of uniformity in the methods of imparting instruction in the different batteries. The number of failures was noticeably less at the larger posts.

A careful examination of the published list of qualified gunners shows 45 first class gunners, 90 second class gunners and 67 third class gunners, making a total of 202.

Had the gunners been classified as suggested in this paper, the list would show 37 first class gunners, 116 second class gunners and 49 third class gunners, and would indicate their proper relative merit.

But as it now stands there is shown in one regiment of artillery the anomaly of having 54 *second class gunners and* 5 *third class gunners with higher averages than the lowest first class gunner. And* 66 *third class gunners with higher averages than the lowest second class gunner.*

Unquestionably the same conditions have been found to exist in the other four regiments.

The foregoing may be regarded as a genteel sufficiency in demonstrating the faults of the present system of classification, and points a moral to adorn the tale in a previous portion of this paper.

A few remarks in closing as to the incentive for the enlisted men of the artillery to become gunners, other than the natural pride which each artillery soldier is supposed to take in his profession.

What reward is there for the first class gunner to console him for his hard work other than the knowledge of having performed his duty well? Theoretically this is all right, but practically it is all wrong.

The wearing of an insignia—which belongs to the Government and which has to be turned in each year—is of no earthly value to the individual.

Give the gunner his medal—don't lend it to him on conditions!

Prescribe, if necessary, that he shall not wear it on his uniform without the necessary qualification, but let it be his own property.

The qualified gunner should be *par excellence*—a privileged character. Give him some practical reward as an incentive to renewed effort!

One could write a sermon on this point! Distinguish him above the drones in the battery!

The question of increased pay for the gunners according to their classes would probably not be considered, although I believe a substantial reward of this nature would do far more to benefit the artillery service than any other known method.

In default of this I would suggest that in the artillery furloughs be granted *to gunners only*, as follows:

To each first class gunner a furlough not to exceed thirty days in each year; to each second class gunner not to exceed fifteen days, and to each third class gunner not to exceed seven

days; provided that no more than four gunners shall be absent from the battery at the same time.

In all artillery drills gunners of the first and second class should only act as chiefs of detachments and gunners, never as cannoneers except in cases of necessity. A daily roster to be kept to equalize the number of drills.

First and second class gunners should likewise be exempt from all details on extra fatigue (except as non-commissioned officers) unless the whole battery is required.

Let the gunner see that there is really something to be gained by close application to his duties, beyond the annual publication of his name in orders and the wearing of a borrowed insignia, and a spirit of emulation will spring up that has heretofore been untouched.

[G. O. 14, A. G. O., 1895, has been promulgated since the above was printed.]

THE UNITED STATES MARINE CORPS CONSIDERED AS A DISTINCT MILITARY ORGANIZATION.

By Major H. B. LOWRY, U. S. Marine Corps.

"THE tendency of industrial progress at present is to concentrate vast interests under common control, and the same condition which has induced manufacturers and producers to sacrifice individual control, and embrace the opportunity of combination," is co-existent with nearly all of the general legislation affecting naval affairs, and is also markedly demonstrated in the general policy of the Navy Department for years past in its dealings with that portion of the United States service under its immediate supervision and control.

In no instance is this policy made more plain than is shown by the relation that the Marine Corps holds to the Navy at the present time, when compared to its attitude and standing in matters military and naval years ago. The United States Marine Corps is not a part of the Navy, and though *its present* sphere of action is with the Navy, it is not, in law, of it. It has a distinct and positive organization of its own, as is shown by the Act of Congress giving it birth.

This claim is founded upon certain public laws of ancient date,

and upon the construction given thereto, and the practice and usages thereunder that have prevailed, to a greater or lesser degree, for more than eighty years.

The laws referred to, and the practices and usages of the Departments (War and Navy) concerning them, were declarative, and in pursuance of a policy in relation to the position of the Marine Corps, wholly different from that which now prevails, and are comparatively unfamiliar to the inquirer of to-day.

For these reasons, it may be well to present with care, and some minuteness, the statutory provisions upon which these independent functions are based, and the various rulings and adjudications in relation thereto.

The Marine Corps bases its claim to be considered and treated *as a separate and distinct organization*, upon the Act of Congress approved July 11, 1798, entitled "An Act for the establishment and organization of a Marine Corps," the first section of which reads:

"In addition to the present Military establishment, there shall be raised and organized a Corps of Marines."

This Act brought into existence "an additional military body," but gave to it no connection with the Army, as a positive part and parcel thereof; neither did it assimilate it with or join it to the naval establishment. It created a Corps of Marines, *independent of either the Army or the Navy.*

In the case of Reid vs. the United States, Mr. Justice Davis, speaking for the Court, said:

"The Marine Corps has an organization distinct from either (Army or Navy). Rev. Statutes, Sec. 1596 to 1623. In arranging the Revised Statutes, the sections relating to this corps stand in a separate chapter under Title 15, entitled the 'Navy,' but we are to draw no conclusions from this fact."

And this view is accepted, and promulgated in a more recent opinion of Attorney-General Miller, who, under date of July 31, 1890, says:

"The military establishment of the United States consists of three principal organizations, the Army, the Navy and the Marine Corps. Each has an organization distinct from that of the others, as plainly appears in the Revised Statutes, and each is the object of a distinct annual appropriation by Congress."

"From time to time the corps has been increased and reduced, as war or peace or politics suggested," but in no instance has its

military independence been restricted; neither has any law been enacted that places it permanently under the complete and entire jurisdiction of either the War or Navy Departments.

Section 6 of the Act of July 11, 1798, reads:

"The Marine Corps established by this Act shall at any time be liable to do duty in the forts and garrisons of the United States, on the sea-coast, or in any other duty on shore as the President at his discretion shall direct."

In this language we find the authority for the Marine Corps to serve with the army, to perform army duty, and be under the authority and jurisdiction, while so acting, of the Secretary of War; and it is provided under these circumstances that this corps "shall be subject to the rules and articles of war enacted for the government of the army."

Again, it is provided that, with the exception above cited,

"The Marine Corps shall at all times be subject to the laws and regulations established for the government of the Navy."

Speaking of this section, Attorney-General Wayne MacVeagh, under date of June 11, 1881, says:

"The obvious purpose of the section just quoted (1621) is to provide rules for the *discipline* of the corps, in the different spheres of duty (military or naval) in which it is liable to serve. When serving with the land forces, it is subject to the rules established for the government of the Army; when serving with the naval forces, to the rules for the government of the Navy. The language of the provision does not warrant the inference that it was intended thereby to subject the corps to *any other laws or regulations of the Navy* than such as relate to *discipline and its maintenance*."

Up to 1834, it was an open question as to whether or not an officer of the Marine Corps succeeded to the command at navy yards or aboard of ships, in case of the absence of all officers of the line of the Navy who were senior to him in rank. The law gave the Marine officers positive, not relative, rank, and by virtue thereof, Marine officers had been assigned to the command of prize vessels, and had brought them from distant ports to the United States. Not that officers of the Navy were unavailable for that duty at the time and place, but that the senior officer in command probably deemed it for the best interests of the Government that the command should be thus placed. The same condition of affairs existed at navy yards, the question frequently

arising as to succession to command thereof, in the temporary absence of the officer duly assigned by the Navy Department as the commandant.

Official correspondence on file shows that intense feeling was engendered on each side of this question; so much so, that the Commandant of the Corps recommended, not ordered, Marine officers to avoid as far as possible any personal difficulties with naval officers, growing out of this condition of affairs. Up to this period, and under the Act of Congress of 1798, the Commandant of the Corps was given the "power to appoint an adjutant, paymaster and quartermaster from the line of the corps, who were to have extra pay and allowances" while so serving. But in 1832 a difference arose between President Jackson and the Commandant of the Corps, not as to the authority to appoint these staff officers, but as to the power of the commandant to remove them, after he had once appointed them. (See State Papers, 1832.)

In 1834 Congress settled these mooted questions, by the passage of an act which provided for the creating of a permanent staff; also prohibiting Marine officers from commanding navy-yards or vessels of war.

By this act the permanent "general staff" was created for the corps, and said staff separated from the line of the corps, with no right of promotion therein. The duties and powers of the staff were not, however, definitely fixed by this Act, neither have they ever been so fixed; but like the office of the Commandant of the Corps, these offices, being of a permanent character, were created for one of the "military organizations" of the country, and the law-makers undoubtedly considered that the same rights, powers, duties and responsibilities adhered to the offices thus created as devolved upon the offices of a like character in the army then existing. That this line of reasoning is correct may be concluded from the fact that from the date of the Act creating these offices until a period in the past not far removed, this condition of affairs was recognized by both the War and Navy Departments.

And this now brings us back to the statement as to a condition of affairs outlined in the opening paragraph of this article; that the spirit of concentration and consolidation of the powers and duties of the many, under the head of, or in the hands of, the few, prevails in some of the executive departments of the Government,

as well as it does in the "vast interests" referred to in the opening paragraph of this article.

One point remains to be emphasized. No law exists that modifies or changes the independent position as a "distinct military organization" of the Marine Corps stamped upon it by the act of 1798, a distinction given it at its birth, retained for many years, and gradually allowed to drift from its moorings, a little now, a little then, until it is questionable whether any disinterested and close student of the history of the Marine Corps would at present recognize it, by the duties it performs, and the lack of responsibilities now placed upon its officers.

Regulations, orders, decisions, and that most insidious of all weapons, "custom," have played an important and remarkable part in the disintegration and consequent weakening of the power of this ancient, honorable, and even in the face of all its opposition, efficient corps.

The vantage ground held at present by the Marine Corps forces itself very strongly upon the mind of every thoughtful student of naval affairs, and one of the burning questions of the hour connected with future naval efficiency and discipline, is associated with this corps. That "history repeats itself" is distinctly made manifest when the question of the marine and his functions as a part of the fighting element of our new navy presents itself for examination. Admiral Luce, in his essay upon the Marine Corps, speaking of the use of marines by the ancients, says:

"About 500 B. C. there were two classes, the rowers, the seamen proper, who had the general management of the vessels and sails, and the marines, or fighting men."

And were we to substitute the word *engineers* for that of "*rowers*" and *steam engines* for that of "*sails*," nearly the same condition of affairs would be found in our navy of to-day, as existed at the period referred to by Admiral Luce. Nothing but weakness in its numerical strength prevents the Marine Corps of to-day from filling, to the fullest extent, all the requirements that the new condition of affairs existing in our navy demands; that is, so far as it relates to the fighting element needed to man the batteries, main and secondary, aboard our new floating forts.

This statement will doubtless seem to some as almost a treasonable one in its far-reaching consequences, and certainly startling at least, for who, in times past, has thought of a man-

of-war without associating therewith its full complement of brave and jolly sailors? But time changes all things, and in no single instance has the hand of time been less sparing than when it stripped away the sails and rigging, banished forever our wooden line of battle-ships, frigates and corvettes—those oaken ribbed cradles—and substituting therefor the floating iron batteries, propelled by the magnificent and powerful steam engines of to-day. And with this change came even another. The avocation of the seaman disappeared. Like Othello, his occupation was gone. Call his successor by whatever name you may choose, marine, seaman, gunner or artillerist, the fact remains, it is as plain as the handwriting upon the wall, that the artillerist and infantryman, as combined and found in the person of the marine, is a fixture, useful, economical and suitable for our navy of to-day.

Under existing law the Marine Corps is composed of 3159 men, rank and file, though Congress, by its appropriation for but 2100 enlisted men, virtually reduces the total active force to 2175. A recent examination of the muster rolls shows that 56 per cent. of the enlisted strength are citizens of the United States by birth, 17½ per cent. by naturalization, 8 per cent. having declared their intention to become citizens and 18½ per cent. are foreign born, and have made no declaration of intention to become citizens.

The average annual cost to the Government is $229.56 per capita. Colonel Heywood, the present commandant, has labored strenuously to have Congress appropriate for the support of the full number allowed by law, and it would seem that the present time was pregnant with forthcoming legislation in this direction, for we learn through the reports of the present able Secretary of the Navy, as well as through the newspapers, that the Navy Department finds itself considerably embarrassed, in fact, so crippled by an insufficiency of suitable men, that several of our new men-of-war are compelled to be put out of commission, for the want of men to man them. A partial remedy for this condition of affairs seems, however, to lie near at hand, and is found in the fact that aboard the various vessels now in commission there are about 1000 marines, whose services may be utilized at the main and secondary batteries in connection with their present duties as sharpshooters and daily guard duty, and thus relieve a sufficient number of sailors to form suitable crews for three or four vessels now await-

ing men. Upon this question, the Colonel Commandant of the Corps recently stated before the Joint Committee of Congress on the personnel of the Navy, as follows:

"They (the marines) should form a division by themselves, and fight together, as they have been trained and drilled together. If there are not enough sailors to man the guns, let the sailor divisions be consolidated and given a gun or guns to themselves. This will promote economy in the navy, for there are about 1000 marines afloat, assigned, for the most part, as sharpshooters. If they should be stationed at the guns, that number of seamen would be immediately available for duty on the new ships fitting out, and would cost the Government $69,584 less a year to pay 1000 marines than it does to pay 1000 sailors."

Continuing the line of reasoning then presented by the colonel commandant a little further, and imagining that Congress were to appropriate for the additional 1000 marines allowed by law, and you then have 2000 well drilled, well disciplined men, equal in all respects, and able under all circumstances to perform every duty that the fighting element of a ship is required to perform, and thus release a sufficient number of sailors to organize crews for six or seven vessels of war. Thus could be established an increase of the fighting force of the navy, at an expense of about $139,000 annually less than would be required to place the same number (2000) of sailors in the service. In these days, when economy in public expenditures must go hand in hand with all progressive movements, an unanswerable argument is presented for serious consideration.

The increase in the numbers of the British marines during the last few years is a marked one, and while our naval authorities recognize the superiority of the English navy, as compared with that of other European nations, and hold it up, in many respects, as an example for our guidance, it seems strange indeed that there should be found a number of bright and able naval officers who would dispense with the services of the American marine. England has about 7000 marines afloat. America has about 1000.

VALUE OF THE FIRE OF DISMOUNTED CAVALRY.

By First Lieut. J. T. DICKMAN, 3d U. S. Cavalry.

OUR war of over four years duration brought a rich harvest of experiences, some of which have made an epoch in the history of warfare. Besides revolutionizing the navies of the world valuable ideas were evolved in the organization of immense wagon-trains, in the employment of railroads as a means of supply, in the building of improvised bridges and roads, and the destruction of the same. Operations by large detached bodies of mounted troops, commonly called raids, and dismounted fire of cavalry, were especially brought into prominence. The former were given a trial in the German manœuvres of this year; reports on them are not yet available.

It is only in comparatively recent years that a serious study of military operations in the United States, 1861-65, has commenced.

This was probably due to the fact that attention was naturally first drawn to the quality of the strategy displayed by our armies rather than to the character of the soldiers who later on became veterans, and also to the ignorance of most foreigners as to the political conditions existing in this country at the outbreak of the war and for some time after it was fairly under way. Perhaps we should in time ourselves have forgotten the lessons acquired at such great cost if experience in subsequent European wars had not again called attention to and confirmed them.

The wonderful successes of the German cavalry in the War of 1870 did not blind them to their own defects; in future small knots of tirailleurs behind impassable obstacles will not annoy and delay the uhlans for any considerable length of time, for they now have the carbine in addition to their other weapons.

The way in which General Gourko made use of dismounted cavalry in the Turkish war of 1877-78 aroused the admiration of military critics throughout the world. He repeatedly defeated Turkish infantry with dismounted cavalry.

There is nothing new in the idea of having troops supposed to be effective both on foot and on horseback. Alexander the

Great over 2200 years ago organized the "dimachæ" who were trained to fight both ways. Over 300 years ago people entertained an exaggerated idea as to the value of fire-arms and their influence on cavalry and therefore formed regiments of dragoons. The *arme blanche* acquired great ascendancy in the times of Frederick and Napoleon; the Americans were the first to again make extensive use of dismounted fire-action. For 25 years their achievements attracted but little attention.

There is nothing surprising in this slowness of American ideas in making a way for themselves; many military innovations have had to force adoption through bitter losses.

It is interesting in this connection to read of the difficulties encountered by General Braddock in 1755, in the way of transportation to be obtained by hire, and supplies to be furnished by contract. The former were finally secured through the efforts of one B. Franklin, a Philadelphia printer; he scattered a large number of hand-bills over the country stating that the hussars would be turned loose to seize wagons if they could not be hired. The German farmers of Pennsylvania were scared into bringing forth an ample supply of teams. Most of us have also had some experience with hired teams and know what troubles are likely to arise with men who are not under military control. Our organized transportation is being reduced to such an extent that an expedition of 2000 men on a hazardous mission could be equipped only with the greatest exertion and would then be subject to infinite annoyances. We shall all be sorry for the field quartermaster the first time a small campaign is started. The few pack mules used in the second Garza campaign had to be brought from Wyoming as there were none in the Department of Texas. Packing and the organizing of pack-trains will soon be a lost art in the United States.

We read of how General Braddock, when he found a few scared British soldiers firing from behind trees, rode up, struck them with his sabre, called them cowards, and drove them out into the open to serve as targets for the Indians. What a beautiful target their bright red uniforms contrasted with the green foliage of the forest must have been! A party of Virginians found cover hehind a huge fallen tree and were firing with much effect when the British soldiers, who had never seen that kind of a manœuvre, mistook them for Indians and killed more than half of them. At New Orleans in 1815 we find them

again marching in solid array against breastworks behind which stood the hunters of Tennessee and Kentucky with their squirrel rifles. Was anything learned from these experiences? For a hundred years after Braddock's defeat such a thing as open order fighting was scarcely known, and the bright red uniform they have still.

Our own army up to the outbreak of the war was as stiff as the stiffest, and the idea that rigidity constituted discipline seemed universal. We are told that in the early part of our war it was difficult to get men to dig hasty intrenchments; their idea of a battle was a square stand-up fight. They got over it quickly enough. Yet many of the severest losses in that war were sustained in charges against an enemy under cover when there was but little chance of success. On the afternoon of the 3d of June, 1864, a third assault on the lines of slashings and intrenchments at Cold Harbor was ordered; not a man moved, and it was apparent that the men at least had learned something and appreciated the hopelessness of the task. Whether these ideas are entirely extinct I leave each one to judge for himself.

As late as 1882 we find in use at the Infantry and Cavalry School at Fort Leavenworth, Kansas, a text-book (Mahan on Outpost) which says: "Cavalry is seldom called upon to use firearms. When on outpost service * * a portion of the force may be dispersed as flankers to hold the enemy in check." Sir Garnet Wolseley insists upon it that our cavalry during the war was nothing but mounted infantry. Other English authors take a different view of the matter. However, nearly all European cavalry now have the carbine in addition to their other weapons and they are taught to use it.

It does not seem to be recognized anywhere that the fire of dismounted cavalry, properly trained, is in almost all cases equal to that of the best infantry, and may sometimes even be superior. It will probably require another war to force this point home upon a reluctant conviction. In the meantime let us see if we can find a few facts tending to establish the truth of this assertion.

The drift of the carbine is less at short range and greater at long range than that of the rifle. The mean deviation of the carbine is greater at all ranges than that of the rifle. For these reasons, and principally on account of the relative shortness of barrel, certain allowances are made for the carbine. At known distance firing these amount to a reduction of 7.8 per cent. in the

total required to advance to sharp-shooter, and in skirmish firing to a diminution of 100 yards in the initial distance. It is admitted that these conditions, especially for known distance firing, are very favorable to the carbine. For this reason, and also because results are influenced by many variable causes well known to experienced officers, figures of merit of troops and companies do not form a satisfactory basis of comparison. At department and army competitions, however, such basis does exist, for the advantages, on the whole, lie with the rifle. At these competitions the known distance firing at 200, 300, 500 and 600 yards is under exactly the same conditions for both arms except that at 600 yards the rifle may be placed in the vise-like grasp obtained by the Texas grip and other back positions which are tolerated on the target ground but would hardly ever find application on the field of battle. In the skirmish firing of the competition the rifle is fired at shorter average range than the carbine. When the conditions were made it was not intended to be so but it is nevertheless a fact that, both theoretically and practically, the average range of the 40 shots from the rifle is less than that of the same number of shots from the carbine. This proposition hardly needs demonstration. It depends upon the well-known fact that from the back position, with both hands free and practically no derangement of the rifle, it can be loaded and fired at a rate fully 30 per cent. in excess of the rate for the prone position, thus permitting, under the rules, the bunching of shots at short range.

For example, taking a case not unfavorable for the back position and assuming halts made at regular intervals according to firing regulations and ammunition favorably expended under the rules, we have for the

BACK POSITION.

Halts, Distance in yards.	Number of shots.	Products.
520	1	520
440	1	440
360	1	360
280	9	2520
200	9	1800
200	9	1800
280	9	2520
360	1	360
440	0	
520	0	
Totals,	40	10320

Average distance....258 yards.

PRONE POSITION—CARBINE.

Halts, Distance in yards.	Number of shots.	Products.
440	1	440
380	1	380
320	4	1280
260	7	1820
200	7	1400
200	7	1400
260	7	1820
320	6	1920
380	0	
440	0	
Totals,	40	10460

Average distance...261.5 yards.

The grouping of shots is given in the theoretically most favorable way in both cases; each good rifle shot has his own little system. I have frequently seen 10 and 11 shots fired in 30 seconds (seldom more) with the rifle; much less frequently, more than 7 in the same time with the prone position. The difference in distances is as a rule greater than above indicated; in any event the difference in speed permits such grouping of the shots as will fully overcome the disadvantage of a start at greater distance. It is evident that in competition the rifle is at no disadvantage when pitted against the carbine. Moreover, the competitors of the cavalry are selected from ten regiments; those of the infantry from twenty-five.

A comparison of the results obtained in Department and Army competitions is not unfavorable to the men handling the short guns.

In the department of the Missouri contest held at Fort Sheridan, Illinois, last autumn, the total of the first ten men was as follows:

Carbine, . . 5096; Rifle, . . 4816,

and for all of the Department competitors the average was as follows:

Carbine, . . 454.56; Rifle, . . 430.77.

This advantage appeared in both known distance and skirmish firing.

Similarly for the Army teams:

Carbine, . . 5563; Rifle, . . 5522,

and for all of the competitors of the Army contest;

Carbine, . . 530.25; Rifle, . . 505.27.

Firing with the Krag-Jorgensen, known distances:

Carbine . . 310.9; Infantry, . 299.09.

In a contest held against moving targets—such as would ordinarily be encountered in war—in 1893, the result was remarkable, fully 25 per cent. in favor of the carbine.

While willing to admit that next year the relative positions of the rifle and the carbine may be reversed in some or all of the contests, still those who are looking for inferiority of dismounted cavalry fire will find no comfort in the above figures, which are taken from the records.

When we come to consider the effect of the relative degree of freshness of troops going into action, it is not to be denied that troops in good physical condition, other things equal, are superior

to those who are excessively fatigued, whether from long marching or fighting under severe climatic conditions, or temporarily exhausted from a forced march or a movement at double time. Cavalry going into dismounted action will nearly always be comparatively fresh, even after they have made a tiresome march; to dismount and move about only brings into play another set of muscles but little used before, and marching on foot is as much of a relief as it is for a foot-sore man to get on a horse. Cases might therefore arise in which the fire of dismounted cavalry would be better than that of any infantry available. The English have a regularly organized body of mounted infantry; as they are about 15 years behind the continental powers in military matters this peculiarity is scarcely noticed. There can be no advantage in mounted infantry, except in very peculiar cases, for they have no function which is not equally well performed by good cavalry.

The above comparisons were made between Springfield rifles and carbines, calibre 45, single loaders. The introduction of the new magazine arms of smaller calibre and longer range greatly enhances the value of the dismounted fire of cavalry.

As has already been pointed out, the ballistic performances of the two arms are practically identical within battle range. Their relative values as target guns will soon be tested. It is believed that up to 1000 yards there will be little difference, as the ammunition is identical. Assuming that dismounted cavalry when attacked by an overwhelming force of foot troops must cease firing and remount when the enemy has approached to within 200 yards, in order to save its horses, the period of effective fire would now be as follows:

1000 minus 200 equals 800.
800 minus 200 equals 600.

The remainders 800 and 600, divided by the rate of progress in yards will give the length of time the enemy would be under fire.

The corresponding remainders with the old arms, Springfield carbine, cal. 45, were 400 and 300, because with them the limit of aimed fire was 500 and 600 yards, whereas with the new guns it is 800 and 1000 yards. As it takes more than twice as long to charge over 800 yards as over 400 yards the efficiency of the carbine has been at least doubled.

It is not our purpose to discuss the effect of modern small-arms and artillery on the mounted offensive of cavalry. We ob-

serve that those who say that the cavalry charge against infantry is no longer possible fail to inform us whether a force of foot troops numerically five times as great would have any better chance of success. The next European war will probably give very important indications on this subject which is really only a small part of the duties of a cavalry soldier; and an opportunity for that kind of an attack may not come oftener than once or twice in a war.

But in the many other duties of cavalry, for example, as advance guard of a marching army, clearing the way of obstacles for the troops that follow; or seizing a good position and holding it, like Buford at Gettysburg; or, as a rear-guard, shielding the march of our retreating forces by resisting the pursuing bodies and forcing them to deploy; or, engaging and holding superior forces of the enemy in one part of the field while the main attack is delivered elsewhere; or, rushing to the support of weakened and retreating parts of the line of battle; or, overtaking and holding, or passing and intercepting a defeated enemy, like Sheridan's Cavalry did at Five Forks and elsewhere,—in all these duties the efficiency of cavalry has been greatly increased because the range of its fire has been doubled.

"THE RIGHT (OR LEFT) TURN" OF THE INFANTRY DRILL REGULATIONS.

By Captain D. C. KINGMAN, U. S. Corps of Engineers.

TO TURN AND ADVANCE.

PAR. 141, of the Drill Book is as follows: "Marching in line: 1. *Right* (or *Left*) *turn*, 2. March, 3. *Forward*, 4. March, 5. *Guide* (*right or left*)."

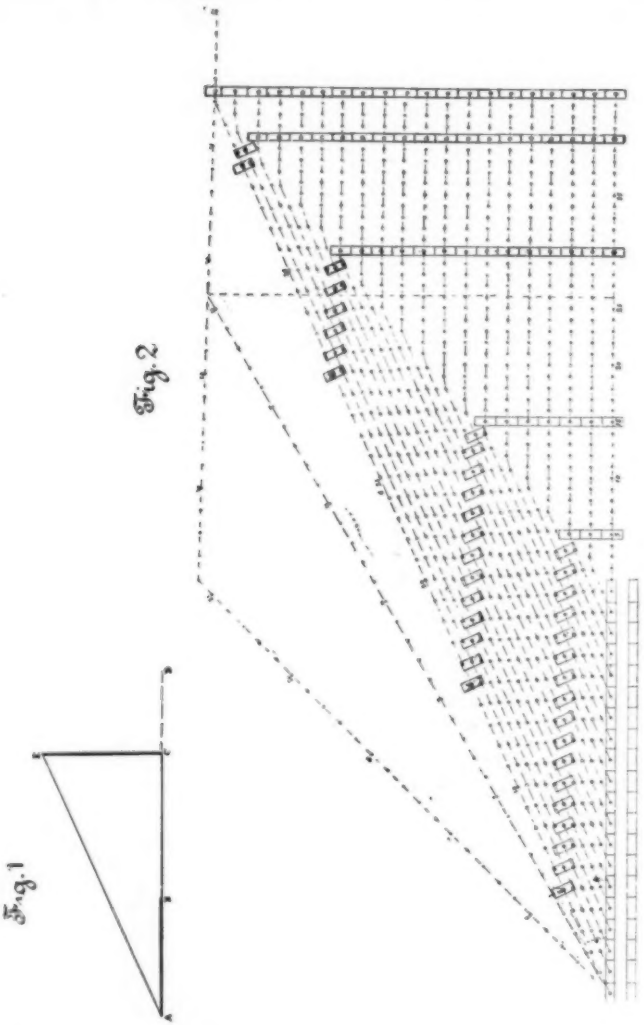
"At the second command, the front rank man on the right, who is the guide, marches by the right flank, taking the short step without changing the cadence; the other men half face to the right in marching, and, moving by the shortest line, successively place themselves on the new line, when they take the short step."

"The rear rank men conform to the movements of their file leaders. When the last man has arrived on the new line, the fourth command is given, when all resume the full step."

It has always seemed to me that the description of this movement is a good deal simpler than the movement itself. It states that all of the men of the front rank, except the leader of the movement, make a half face to the right and move by the shortest line to their respective places in the new line; and that the rear rank men "conform to the movements of their file leaders,"—whatever that may mean.

The shortest distance between two points is measured along a straight line joining them. Therefore the language of the Drill Book would mean that these men, after executing a half face to the right, *march in a straight line* to their positions in the new line. Let us see what this supposition involves.

In Fig. 1, let A B represent the front of a platoon at the beginning of the movement, and C E, the platoon at the instant the movement is completed. Then will the angle C A E, which we will represent by alpha, α, be the complement of the angle at which the men must oblique, B C will be the distance that the leader will advance, marching at the short step and in cadence, during the movement. Represent this distance by x. A E will be the distance covered by the last man to reach his place, marching at the full step and in cadence. This distance must therefore



be equal to twice B C or to 2 x. The angle A C E is a right angle of course.

Then in the right-angled triangle A C E we shall have the square of the hypothenuse A E equal to the sum of the squares of the other two sides. Representing by a the front of the platoon,

and observing that A C is equal to A B plus B C, we have

$(2\,x)^2 = (a + x)^2 + a^2$

$4\,x^2 = x^2 + 2\,a\,x + 2\,a^2$

$3\,x^2 - 2\,a\,x = 2\,a^2$

$x^2 - 2/3\,a\,x = 2/3\,a^2$

$x = 1/3\,a \pm 1\sqrt{7/9 \cdot a^2}$

$x = 1/3\,a \pm 1/3\,a\sqrt{7}$

$x = .3333\,a + 8819\,a$

$x = 1.2152\,a$

If we make a equal to 1, then $x = 1.2152$ or, translated, it means that the movement will be completed at a distance of about one and one-fifth times the front of the platoon from the turning point. The angle is determined as follows:

$$\sin \alpha = \frac{a}{2\,x}$$

$$\sin \alpha = \frac{1}{2.4304}$$

$\log \sin \alpha = \log 1 - \log 2.4304$

$\log 1 = 0.000.0000$

$\log 2.4304 = 0.385.6956$

$\text{Log sin } \alpha = 9.614,3044$

$\alpha = 24^\circ - 17' - 40''$

Comp. $\alpha = 65^\circ - 42' - 20''$

That is to say, the men must oblique at an angle of 65°—42′ in order to move, by the shortest route to their places in the new line.

Fig. 2, shows the various stages of this movement, in the case of a platoon of twenty files front. The small rectangles represent individual men, and are by the scale of the drawing, twenty-eight inches wide by twelve inches deep.

The little circles mark the successive steps taken by the men, and from them, every stage of the movement can readily be discerned. This figure shows how each man moves in a straight line to his new position. During the movement the platoon would have the form of a letter L, one branch of which would be continually increasing in length, and the other continually decreasing at the same rate. This ought to be a rather pretty movement, if it can be executed.

The drawing shows the movement of the front rank only,—it is now necessary to see what will become of the rear rank. The Drill Book as already quoted, says that "the rear rank men con-

form to the movements of their file leaders." Now this may mean that the rear rank men "half face to the right, in marching," with their file leaders, and oblique to the right, and finally come into place in the new line; or else it may mean that each rear rank man shall keep right behind his file leader and follow him, at facing distance from the beginning to the end of the movement.

It certainly does not mean, or ought not to mean, that the rear rank shall push and crowd, or lose step and distance, or struggle and become mixed up with the men of front rank. For this is supposed to be an orderly military movement, and not the misdirected hustling of an undisciplined mob in its efforts to get somewhere.

I will consider first the supposition that the rear rank executes the oblique simultaneously with the front rank. Fig. 3 shows the men near the angle in the act of making the sixteenth step of the evolution. This drawing is made upon a larger scale than Fig. 2, and shows the men in horizontal projection instead of the small rectangles. A simple glance is sufficient to show that an orderly execution of the movement in this way is impossible. At least four men in the rear rank are interfering with each other. Some of them would have to fall back, or be pushed aside, and this would cause confusion and disorder at the angle throughout the movement.

Take the other case, then, and suppose that the rear rank men follow their file leaders at facing distance.

Fig. 4, shows three men obliquing to the left at an angle of forty-five degrees, the rear rank men following their leaders at facing distance. The figure shows that such a movement is impossible. Each rear rank man would have his gun knocked out of his hand by the shoulder of the man on the right of his file leader.

Of course, if the movement was to the right, or the men were without arms, it would be possible, provided the angle did not greatly exceed forty-five degrees. But it would be easy to show, by revolving the figures of these men a little, that when the angle of the oblique became fifty or fifty-two degrees the bodies of the men would come into actual contact.

However it would be absurd to have a marching movement that could not be executed in either direction and with or without arms. Therefore the language of the Drill Book cannot be taken

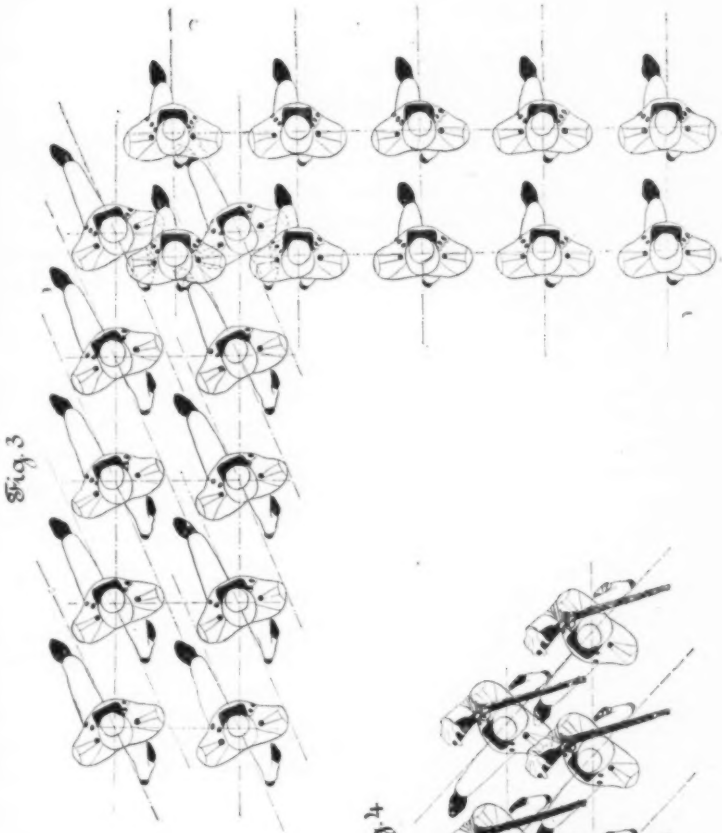


Fig. 3

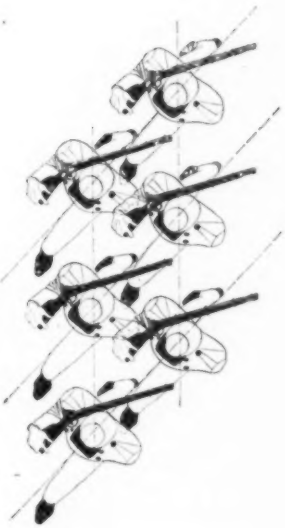


Fig. 4

to mean that the rear rank men follow their file leaders at facing distance.

Going back to Fig. 3. The front rank men appear to be getting along pretty well, because the drawing shows them with the left foot in advance. But can a line of men, in fact, oblique at an angle as great as 65°—42″, without interfering with each other?

Fig. 5 shows a group of men obliquing to the right at this angle and in the act of planting the right foot. A glance at this drawing is sufficient to show that each man is placing his right foot a little in front of the left foot of the man on his right. We know he can't do this without striking the man's foot. This leads to the consideration of the subject of marching, and particularly of oblique marching.

The Drill Book allows to each man a rectangular space, twenty-eight inches wide by twelve inches deep. The actual breadth of a man is about twenty-two inches.

See Fig. 6. The space of three inches on each side goes to make up the six inches interval allowed between files. I cannot help saying, in passing, that to my mind the doubtful advantages of this interval are not sufficient to offset its positive known and serious disadvantages.

The Drill Book describes the manner of marching in quick time as follows: (Par. 32) "move the left leg smartly, but without jerk, carry the foot straight forward thirty inches from the right, measuring from heel to heel, sole near the ground, knee straight and slightly turned out; at the same time throw the weight of the body forward, and plant the foot without shock, weight of the body resting upon it; next, in like manner, advance the right foot and plant it as above; continue the march, keeping the face to the front."

Fig. 7 shows a man marching. A shows him just as the left foot is planted, and B just after he has carried forward the right foot. And we can see that in marching he moves his feet over a strip which in the drawing is tinted brown. For a man with ordinary sized feet, this strip would be at least twelve inches wide, and for one full step he will require a rectangle twelve inches wide, by forty inches long,—this being the distance from the heel of the foot in rear to the toe of that in advance. In general therefore each man must have at all times a rectangular piece of ground of the above size, free to himself, and unoccupied by the feet of other men, to enable him to march with steadiness and regularity.

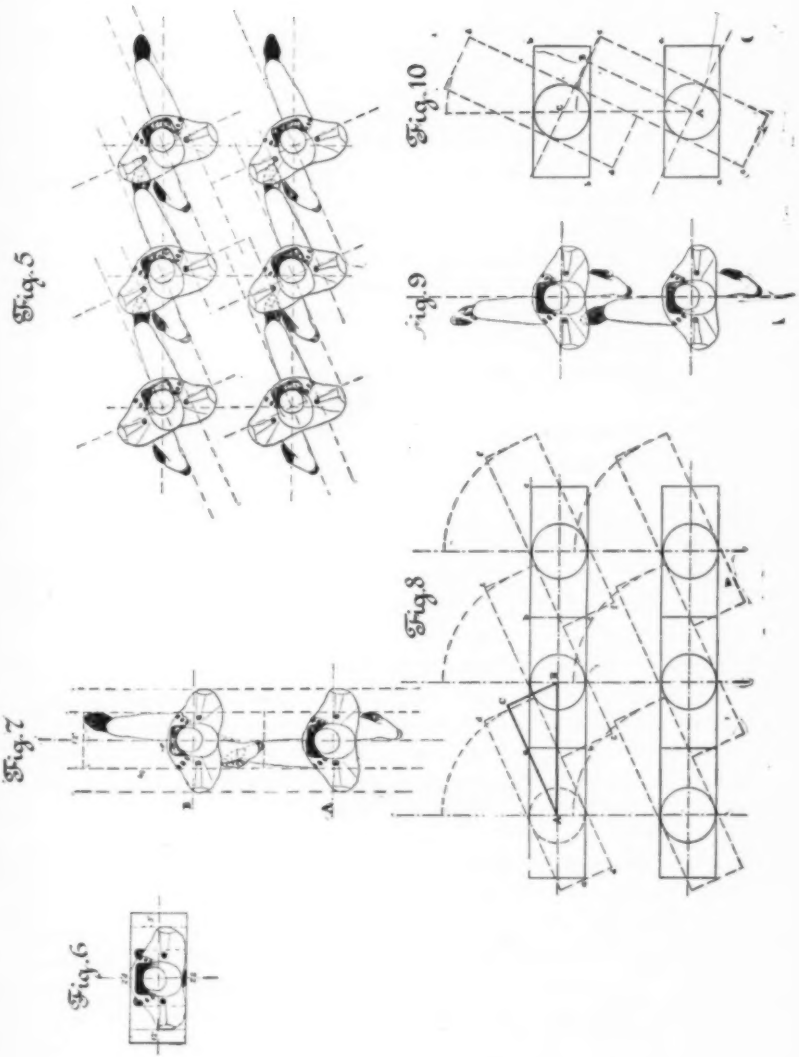


Fig. 5
Fig. 10
Fig. 9
Fig. 8
Fig. 7
Fig. 6

The only exception is in the case of men following in file, as will be explained later on. This condition will therefore limit the angle at which a line of men can oblique.

In Fig. 8 let the rectangles aa, bb, cc represent three men in line at their proper interval. Now as before stated, these men in advancing must each have a space of ground of the designated size to move his feet in. The same will be true in obliquing but in this case the rectangles must, of course, be laid off in the direction of the movement. If therefore we conceive the rectangles to be revolved about the axes of the men until they touch each other, as shown by dd, ee, ff, we shall reach the limit at which men can oblique in line. In the right angled triangle A B C we have the side A B equal to twenty-eight inches, because it is the distance between the centres of two adjacent men ; and B C equal to twelve inches, because it is equal to half the sum of the widths of two of the rectangles. Therefore in the triangle we shall have

$$\sin A = \frac{B\,C}{A\,B}, \text{ or } \sin A = \frac{12}{28} = .4285.$$

From a table of natural Sines, we find that this number is the sine of 25°—22′. But the angle B A C is the complement of the angle of the oblique. Therefore 64° —38′ is the extreme angle at which a line of men can depart, in obliquing from their original direction. But it has already been proved that in order that the men, in executing the turn, shall move by the shortest line to their new positions, they must oblique at a greater angle, namely 65° —42′, which as we have just shown is impossible. This angle 64° —38′ was deduced under the supposition that the men all marched with perfect regularity, their feet moving like the parts of a single machine. This is in practice quite impossible. Owing to the inequalities of the ground and other causes, men will sway about a little in ranks, and to prevent them from stepping on each other, the width of this rectangle ought to be increased to at feast fourteen inches. This would allow each man an inch on each side, to cover irregularities in marching. If the rectangle is taken as fourteen inches wide it may be shown in the same manner as before that the limiting angle of the oblique is sixty degrees. This is about what it will be found to be in practice.

Fig. 9 shows a file of men marching at facing distance, and it shows how the rear rank man steps into the front rank man's space without interfering with him. They can do this as long as they keep step and move straight to the front. But if they

oblique ever so little to the right, the rear rank man will step on his file leader's right heel; and if they oblique a little to the left, he will step on his left heel.

From Fig. 10, and by a course of reasoning similar to that already employed, it may be shown that thirty degrees is the *smallest* angle at which a line of men in double rank can oblique from their original direction. Hence all oblique movements in line in double rank must be between the angles of thirty and sixty degrees, and any manœuvre which requires a greater or less angle is improper if not impossible.

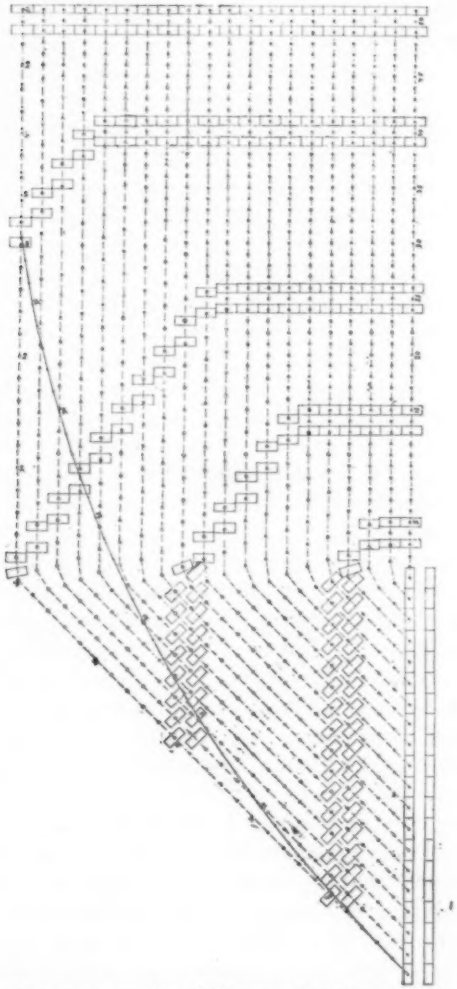
To go back to the movement as shown in Fig. 2,—we have proved that it cannot be executed in this way, because it produces crowding and confusion in the rear rank, and because it requires the men to oblique at an impossible angle. The *unqualified statement* in the Drill Book that the men move by *the shortest line* to their places in the new line *is incorrect*. They can't do it, and of course they don't do it. But what shall they do then. They might of course oblique at an angle of sixty degrees,—in other words take the direction shown by the middle line on Fig. 2. This, in this particular case would bring the last man opposite his place in line at the end of the thirty-sixth step. He would be a little over five paces behind the line then and it would take eleven steps for him to catch up. This would mean that several files on the left would be stringing back in échelon. This method would not do away with the confusion in the rear rank either.

I think that the only way in which this movement can be executed in anything like an orderly and military matter is as shown in Fig. 11. Here all the men except the guide or leader oblique to the right at an angle of forty-five degrees.

The rear rank men execute the oblique the same as the front rank. Each front rank man changes direction forty-five degrees to the right, and moves forward as soon as he arrives opposite his place in the new line. The rear rank man obliques in behind his file leader as he changes direction, and follows him thereafter at facing distance.

Fig. 11, shows the different stages of the movement, as in Fig. 2. The rectangles represent the individual men, and the small circles show the successive steps of the front rank. For this size platoon the movements would be completed at the fifty-first step. None of the men move by the shortest distance to their places in the new line. There is some appearance of crowding at the point

Fig. 11



where the men change from the oblique to the forward movement. I think a careful examination of the drawing will show however, that it is theoretically possible at least to execute the movement without check and consequent loss of distance, *if the men march with perfect regularity.*

This result can hardly be attained in practice. There is another trouble, and that is the impossibility of telling when the

files have arrived opposite their place in line. They have to determine this themselves of course, and the result generally is that they oblique too far. They see this as soon as they change direction, and they try to correct it by taking an extra long step or two to the right and front. This leaves the following men behind; and gives the movement a hurried, jumpy and unmilitary appearance.

It has been suggested that the proper execution of this movement is a sort of compromise between the two described. That is that the men in obliquing, should start at forty-five degrees and afterward direct their march, not towards the point on the ground where they will finally come into the new line, but towards what would be their place in the line prolonged, if they were already there. This point of course keeps moving as the new line moves, and the path followed by each man would be a curve. It will be a particular case of that curve known mathematically as the "Curve of Pursuit."

It is shown in black on Fig. 11. It is only necessary to look at the curve to see that this course would have all the disadvantages of the other two methods, without the corresponding advantages of either.

About the best that can be said of this "Right (or Left) Turn" is that it gives a choice between pushing, crowding, hustling, loss of step and loss of distance; or else straggling, breaking, and opening out, with straddling, hurrying and closing up at the finish. The officers, guides and file closers can have little control over the movement. It depends on the men, and 'tis each one for himself and the devil take the hindmost.

It is a cavalry movement properly, and does not belong to the infantry, where double rank is the regular formation. I do not like it as well as the old way. For then it was executed at double time, and the disorder and confusion were sooner over. I think on the whole that it is a poor substitute for the "wheel," as a means of changing direction. The wheel was in a measure controlled by the guides, and it was always under the direction of the file closers, and subject to their correction. It was not a particularly difficult movement to acquire, and could always be taught incidentally while the men were learning the other things necessary to make soldiers of them. A badly executed wheel was no worse than a badly executed turn, and a well executed turn, as shown, is almost an impossibility.

Of course the wheel had to be given up when the touch of

elbows was abandoned. I have already expressed my opinion of this six-inch interval.

If the question merely involved a certain lack of prettiness and smartness of execution it would be a small matter, and not worth serious discussion, but it means a good deal more than this. The end and object of all drill is largely discipline, and surely discipline cannot best be attained by trying to make men do something that it is impossible to do well.

A movement that necessarily involves pushing and crowding, confusion, straggling and loss of distance, cannot fail to impair in some degree that feeling of buoyant self-confidence, that indescribable something that we call morale.

The purpose of discipline, we know, is to overcome in men, in time of great danger, the natural impulse of fear, to keep them subject to the will of their officer, whereby at his command they will face danger and death, when every natural and selfish feeling prompts them to abandon all, and seek personal safety alone.

Now I do not mean to say that the execution of the Right Turn under fire would necessarily cause the whole company to run away. But I do say that this movement cannot be executed at any time without a certain loss of morale. Perhaps the loss would be very small,—most likely it would.

But at a critical time it might be the straw to break the camel's back. There is plenty of unavoidable confusion on the field of battle, and it is hardly worth while to introduce an unnecessary element through the medium of the Drill Book.

CERTAIN HISTORICAL DATA REGARDING EXTENDED ORDER.

By Captain MOTT HOOTON, 22d U. S. Infantry.

I SHALL endeavor to prove by a few brief extracts from history, that modern skirmish drill, from which the extended order has been developed, was practiced on this continent during more than a century of forest warfare with the American Indian.

About the first of September, 1774, the western wing of an expedition of eleven hundred men was assembled at Lewisburg, Virginia, under the command of Colonel Lewis, to take the field against the Indians. After a march of 19 days they came in contact with a large body of the enemy under the command of a noted chief by the name of Corn Planter. The Virginians were formed in skirmish order in two lines, and marched up the Ohio River to a point where the engagement began about sunrise. They were at first driven back by a destructive fire from the Indians, but having been reinforced the Indians were pushed back till they made a stand, forming line behind logs, trees, stumps, or other cover, and with both flanks resting on a river. The Indians had so manœuvred, however, as to place the Virginians at a disadvantage with their backs towards the confluence of the Kanawha and Ohio rivers. The hostile lines in this position swayed backwards and forwards as the tide of battle rose and fell for many long and anxious hours. Colonel Lewis realizing that something decisive must be done as night was approaching, sent four companies under Captains Shelby, Evans, Mathews and Stuart to turn the enemy's flank. This was accomplished under cover of the high bank of the Kanawha River, and resulted in the retreat of the savages who thought that it was a reinforcement that had arrived which was known to be on the way. They left 62 dead on the field, and threw a great many corpses into the river. The Virginians lost 75 killed, including 2 colonels, 5 captains, 3 lieutenants, and several others besides 140 rank and file wounded. I have selected this engagement as an example of a typical battle of the period, fought between the two races with-

out any auxiliary forces on either side. It is to be presumed that the men of each line were separated from each other in file, by the natural interval they would take in securing cover, behind trees, stump or other shelter.

In 1792, the Indians on the frontier were so aggressive and formidable, that General Wayne was ordered to invade their territory at the head of a considerable force, the army having been increased to 5000 men. A new system of tactics, suitable for Indian warfare, was devised by a council of war, consisting of Generals Washington, Wayne and Knox. Its principal features were facility of deploying quickly in thick woods to resist an unexpected attack, and a formation in échelon to protect the flank, it being customary with the Indians to make their attacks on the flanks. The line was formed in skirmish order, each file being separated from the other by an interval of more than an arm's length. General Wayne used neither pickets nor patrols for the reason that they were always cut off and destroyed. The camp was protected by a chain of sentinels furnished from the camp guards. General Stanley protected his camp in the same manner in the expedition of '73. The Canadians had developed the same system of tactics from similar conditions, and it was a subject of complaint in Montcalm's army that the Canadian soldiers would derange the ranks by falling down to load after firing. The prevailing impression in this country that Braddock's defeat was owing to a surprise is erroneous. It was the result of his refusal to allow the British soldier to break ranks and take cover and a flank fire from the enemy who occupied a commanding position. The enemy consisted of about 500 Indians, commanded by a French officer. Notwithstanding these disadvantages however, the Provincials, who fought in woods fashion might have retrieved the fortune of the day if the British soldiers had not fired into them from the rear.

On the 27th of September, 1812, our army, under the command of General Harrison, landed on the Canada shore near Amherstburg, and the 2d of October he started in pursuit of the English army under General Proctor, taking with him 140 regulars, Johnson's mounted regiment of 1500 men, and Governor Shelby's Corps, amounting altogether to 2500 men. Our army came up with the enemy on the afternoon of October 5th, and found him posted in order of battle, with his left on the Thames River and the line extending through a beach forest, the right

being protected by a swamp in which a large body of Indians under Tecumseh was posted. Soon after our army arrived in position, the remarkable fact having been reported to General Harrison that the British regular infantry was formed in extended order in imitation of the tactics of Washington and Wayne when opposed to Indians, he immediately ordered Johnson's mounted infantry from Kentucky, to charge the British infantry. The regiment was formed in close column with a supporting line 100 yards in rear, the two other brigades en potence or crotchet facing the swamp in which the Indians were in position. Johnson's regiment had advanced but a short distance when it received the fire of the British infantry. Some delay was occasioned by unmanageable horses, but after receiving a second volley at short range, they rode through the enemy, wheeled about and poured upon them so destructive a fire that they surrendered.

The conclusions of the historian upon this battle are as follows: "Had the British regular infantry preserved their normal formation of close order when opposed to cavalry, the result of the contest between them and our militia might have been dubious."

In this battle we had 120 regulars and 30 Indians. The remainder were militia. The British had about 1000 regulars and an immense force of Indians, but the latter were entirely neutralized by the skilful manœuvring of our general which put them in the air, so that they scarcely fired a shot. We all know that it was in this battle that General Johnson killed Tecumseh.

Major Scheibert, of the Royal Prussian Engineers, who was on the staff with General Robert E. Lee, says in a work which he has written on the American Civil War, "that they, referring to the Americans, did not possess the military instruction of the English, but in compensation they had developed that practical intelligence which distinguished them. In their combats with the Indians they had learned to utilize the peculiarities of the surface of the country, and when they raised themselves up against the rigid lines of the English, they opposed them with the supple line of skirmishers, and notwithstanding their defective military organization they drove them out of the country."

The American manner of fighting was well known in Europe, but it did not receive any attention. The French, however, when they had large armies of young troops after their Revolution,

adopted these tactics, binding their columns together with chains of skirmishers thus giving them the mobility of the dispersed order and the solidity of heavy columns, and it was with these tactics that Napoleon overthrew half the powers of Europe.

The Americans in their Civil War had recourse to new methods in the manner of fighting, which had never been tested on any adversary. There were perfect points of resemblance between the American tactics and the method of fighting adopted by the German army. The abandonment of the column of attack for line formation, even in the second échelon, is altogether in conformity with the German tactics, as well as swarms of skirmishers in the front; the only difference being in the reserves, which are altogether replaced in the American army by the second échelon.

General Holabird, in the preface to his translation of Grand Military Operations, says: "Unfortunately nothing is gold with us until it has been coined in Europe."

The tactics of Morgan and our riflemen of the Revolution, and of our frontiersmen, became of infinite value and authority after an appreciative Frenchman had seen their use and fixed their value. Meanwhile our soldiers were drilled to skirmish against Indians by the same tactics that the Prussians used against the Croats before the American Revolution. The tactics we used in the Revolutionary War were taken to Europe by the French officers who were in our service in that war.

Capt. F. N. Maude, late R. E., in an article on the Evolution of Modern Drill Books, published in our JOURNAL OF THE MILITARY SERVICE INSTITUTION for March 1893 says that that which the Germans are now doing is only a recurrence to the practice of the old Peninsula Light Division under Sir John Moore at Shorncliffe, and they learned this from their former experience in America.

Comment and Criticism.

(The remarks under this head have, generally, been invited by the Publication Committee, which desires that, as far as practicable, these "Comments" should appear under authors' names.)

I.

"The Preliminary Examination: West Point."

Professor E. W. Bass, U. S. M. A.

IN an educational institution the curriculum, the time for its mastery and the standard of admission should depend upon each other.

The relation is so absolute that in general any two will, within narrow limits, determine the third. Especially will the curriculum and time fix the proper standard of admission.

With a severe curriculum there must exist a standard of admission which will reject those with little or no aptitude, otherwise the time question is indeterminate.

A disregard of these important relations must result unfortunately for the institution and for many pupils.

In 1812 a standard of admission to the U. S. Military Academy was established which fairly corresponded with the course of instruction and the time. The condition of the nation, and the science of war as then known, very properly limited and fixed both the standard of admission and the subsequent course.

In 1866 an elementary knowledge of English grammar, descriptive geography and history of the United States were added to the requirements of 1812.

During the ten years beginning with 1878 and ending with 1887, 1066 cadets were admitted to the Academy, and but 517 graduated, a number of whom had two trials over a part of the course. That is, of *those admitted under the present standard*, about 48 per cent. graduated. Some failed physically, but many had two trials before succeeding.

The methods and means of instruction at the Academy have received in the past, and continue to receive the commendation of all who inspect its system. Assuming that the instruction and system are good, it becomes an established fact that a proper relation did not then, 1878 to 1887, and does not now, exist between the curriculum and the standard of admission.

As a consequence of the present low qualification standard, many are entirely misled as to the object and character of the Academy.

They enter with very little preparation, and without established habits of study. Some enter with anticipations for the future which correspond fairly well with those of an ambitious recruit at enlistment.

As a rule, they fail after a vain and injurious effort to master what is really far beyond their powers as developed.

To send such young men here to endure the torture of a vain struggle without hope and to suffer the pain and mortification of inevitable failure, is as unjust to them as it is injurious to the Academy.

The apparent remedies are:

1. To diminish the curriculum.
2. To increase the time, or establish a preparatory school.
3. To increase the standard of admission.

1. During the past 25 years the science and art of war have advanced in a remarkable degree. The means and details for applying and carrying out the now established principles of war have become exceedingly extended and complicated.

The construction of large guns, machine guns, torpedos and their use in the defense of harbors, signalling and field telegraphy, breech-loading guns, both large and small, range and position finders, smokeless powders, use of electricity, reconnaissances, grand and minor tactics, are some of the subjects requiring much more attention and study than formerly.

In consequence the course of instruction has increased. For some years the Academic Board has been between two fires. On the one hand, complaints from cadets and those personally interested in them, that the studies are too long and too difficult; and on the other hand, reasonable demands from proper authorities that certain important subjects should be taught, or more fully developed, and that practical instruction should be increased.

It is not held that a graduate must be thoroughly versed in all that pertains to his profession. A lifetime is generally too short for that, even with the most industrious.

But an exact knowledge of the fundamental principles of those essential subjects which constitute the foundation of military science, together with a certain amount of practical instruction, is assumed to be necessary for a graduate of the military school of this nation.

The curriculum of the Academy is not made by theory, nor by any one set of men. It is the result of experience, necessity and growth. It has been developed slowly by the necessities of the Government, working always through extremely conservative channels.

That unnecessary subjects are in the course is hardly possible, but there is no doubt but what the graduates of to-day should have more instruction in several important branches.

It is the general opinion of the higher officers of the army, and of many of the members of the various boards of visitors to the Academy during the past twenty-five years, and of the Academic Board that there should be increased instruction both in theory and practice in grand and minor tactics, in surveying and the use of surveying instruments.

More instruction on hygiene and sanitary science is considered necessary by many good authorities.

The most elementary history is now studied, and there is no time for a desirable course of military history, which should precede and prepare the way for the study of the art of war.

More time for the study of the general principles of elementary law, especially the rules of evidence, is asked for as a foundation for the subsequent study of particular branches.

It is almost the universal opinion of capable judges conversant with the Academy that English language and literature should have more time and consideration.

The time now allotted to practical military engineering is insufficient to thoroughly carry out the very essential and necessary instruction in that branch, required by the regulations.

The course in pure mathematics, which now takes up the greater part of the first two years, is essential for the study of mechanics, optics, acoustics, astronomy, ord-

nance and gunnery and engineering, and it cannot be diminished materially with the *present standard of admission.*

Without further consideration it must be apparent that the interests of the Government and Academy require an increase of instruction, not a decrease, and that the curriculum of 1894 should not be determined by the standard of admission of 1812.

2. The experiment of a five years' course has been tried twice and abandoned. The difficulty is, the present standard does not reject those with little or no aptitude. Many now enter the Academy who could not master the course in any reasonable time, if ever.

It is also the opinion of the best judges that four years of steady, continuous, severe mental and physical training is enough, and produces better results with *capable students,* than a longer period.

A preparatory school has been suggested. Without doubt such a school, if properly established and conducted would remedy the difficulty as far as the Military Academy is concerned. In order to do so within a reasonable time, the qualifications for entering it could not be much lower than those now required for the Military Academy.

The period of instruction for such a school could not properly be less than two years —for a less time would not, in general, suffice to determine whether an ignorant boy would develop. Each class on entering would require at least three times the probable number of yearly vacancies at the Academy, for statistics show that not more than one-third of a number of boys selected at random, will develop properly for mastering scientific branches.

Accommodations for instructing at least 600 would be necessary. Its annual expense would exceed that of the Military Academy. Many would fail, and there would soon be a question as to a more preliminary preparatory school in order to select for the first.

3. The only other remedy for the difficulty is to increase the standard of admission as proposed by Lieut. Willcox.

With the increased standard, and some changes in method of instruction which will soon be rendered possible by conveniences in the new academy building, the course in pure mathematics, which now requires from 4 to 5 hours, daily, during the first two years, could be reduced to about one and a half years; thus rendering available 4 to 5 hours daily for one-half year. This additional time would permit the introduction of those important subjects which are excluded at present, and which are considered as essential. In addition at least 60 or 70 per cent. of those qualifying under the proposed standard could be graduated.

Thus without increase of expense, the number of the graduates of the Academy would be increased and the Academy would more completely fulfil its mission.

Since 1812 the country has progressed from a wilderness with a scattered population of between six and seven millions to one of the greatest nations of the world with a population of between sixty and seventy millions. With the increase in population has come a corresponding increase in wealth, power, public and private interests, and education. The public free school system has developed and kept pace with the country in all respects. Over $100,000,000 are now spent annually upon the common schools, and to-day they are the most complete and best in the world. So great is the disparity, that comparison between the free education of 1812 and 1894 is difficult, and yet the standard of admission to the U. S. Military Academy is practically the same. For many years the Academy has been worked under strained conditions.

That there are at present relatively many more boys qualified to enter the Academy under the proposed requirements than in 1812 were prepared to enter under the then existing requirements, cannot be doubted.

In this connection attention is invited to the following extract from the report of Major General Schofield, commanding the Department of West Point, dated October 14, 1878.

* * *

"Another important question has been suggested as appropriate to be considered at this time, viz.: whether a still further advance may not be made in the standard of admission to the Academy resulting in a correspondingly advanced education of the graduates. Without discussing the question further, I think it may safely be asserted that the qualifications for admission to the Military Academy should be as high at least as the facilities for popular education throughout the country will justify; so that those young men only may hope for admission who have proved themselves capable of mastering the studies pursued in the public schools of the country to which all alike whether poor or rich have free access."

* * *

It will be observed that the principal increase proposed is the addition of a little elementary algebra and plane geometry to the mathematical requirements of 1812.

It is assumed that the necessity for the requirements proposed in other respects, is so apparent to any one having a knowledge of any scientific academy as to require no further reasons or argument.

The fundamental question is, shall the requirements for admission to the Military Academy include algebra and geometry as proposed?

In considering this question it is important to note, not only the main fact that the mathematical course in the Academy to-day is far in advance of that of 1812, for which arithmetic only was selected as the proper preliminary test; but also the fact that a youth of 17 to day with no mathematical knowledge beyond arithmetic as now generally taught, does not, as a rule, compare in ability or promise with one of the same acquirements in past years when educational facilities were relatively almost nothing. In other words, it is safe to assume that the boy of 1812, or even of many years later, who had mastered arithmetic, would at this period be a good scholar in algebra and geometry. The standard of 1812 applied in 1894 does not give the Academy as good material as it did when first established.

The general method of instruction throughout the country has also undergone material change. Formerly very few subjects were taught, but they were gone over with great thoroughness. The tendency for some years has been to extend the scope, by introducing more subjects, and as a rule, attaining less thoroughness in some of the more elementary ones. Instead of devoting most of the time up to 15 and 16 years of age to arithmetic, the pupil at present is pushed into algebra and geometry oftentimes with an incomplete knowledge of the former.

Objections that will probably be offered to the proposed standard are:

1. That the number of failures at entrance, now comparatively large, will be increased.

On the contrary, I believe, that the selection from a higher grade, will in a short time have the effect of diminishing the number of failures. But whatever the standard may be, the number of failures at entrance will depend as much, or more, upon, *the selection* as upon the *standard for admission*.

There is no good reason why incompetent appointees should be selected. There are youths in all parts of this country qualified to enter the Academy under the present, the proposed, or even a much higher standard. Their selection is all that is necessary. Why they are not always selected is a question which I cannot properly discuss.

2. It is sometimes held that the West and South would be unable to furnish their quota of youths with higher qualifications.

Fifty years ago there was some truth in the above, but now a glance at the public schools, academies and universities throughout the West and South show that such is not the case.

The Cadet Register for 1891 shows that the head man of the 1st Class was appointed from At Large; of the 2d Class was appointed from Washington State; of the 3d Class was appointed from Texas; of the 4th Class was appointed from Oregon.

In the first five of the classes graduating from 1881 to 1891, inclusive, are 19 from the Eastern and Middle States; 33 from the Western and Southern States; 3 from At Large.

An examination of the rejections at the Academy from 1867 to 1884 establishes the fact, that the percentage of failures is as independent of geographical lines as it is of the standard itself.

The first seven states and territories with the smallest percentage of failures were in order, Colorado, New Mexico, Dakota, Vermont, Minnesota, Oregon, Utah—six western and southern to one eastern.

Wisconsin lost 18.4 per cent. and Pennsylvania 31.8. Florida lost 18.4 per cent. and Rhode Island 40.0. Virginia, Arkansas, South Carolina, Nevada, Montana and Idaho had the greatest percentages of failures.

The data bearing upon the subject indicates that the percentages of failures has no fixed geographical law, which is another proof of the statement that the large number of failures at entrance is mainly due to the *selection of unqualified appointees* from the midst of capable young men. This statement is emphasized for the reason that the large number of failures at entrance is generally used as an argument against the best interests of the Academy, and the cause is not generally placed where it belongs.

From 1873 to 1886, inclusive: Of the candidates selected by competitive examinations, 77 per cent. entered the Academy. Of the candidates not selected by competitive examinations, 60 per cent. entered the Academy.

From 1873 to 1882, inclusive: Of the cadets who entered the Academy, having been selected by competitive examinations, 62 per cent. graduated. Of the cadets who entered, not having been selected by competitive examinations, 44 per cent. graduated.

The competitive examinations were not held under any general, well arranged system, but were frequently conducted by those inexperienced in such matters.

3. Another objection that is frequently offered against a higher standard is that it will militate to the disadvantage of some poor but worthy boys. This could be answered by the statement that a question in regard to the general good and best interests of the country and Academy should not be determined by the personal advantages or disadvantages of any one class, be they poor or rich. That the proposed standard will be to the advantage of worthy, and to the disadvantage of unworthy boys of all classes is certain; but in addition it is believed that a thorough consideration of the effect of a higher standard will develop the fact that it will militate more against the indolent sons of the rich and poor, than against worthy sons of the poor and rich. The present low qualifications are well within the reach of idle boys of affluent parents, who have means for securing special instruction for the entrance examination. The rich also, as a rule, have much influence in securing appointments, particularly in the larger cities. As a rule the poor boys are selected upon their merits. It is therefore believed that a higher standard will cut off more in proportion from the wealthy, the effect of which will be to throw more of the appointments to the other classes. It will certainly limit the selection to the more worthy boys of both classes.

That some poor but worthy boys will be unable to acquire the proposed standard cannot be denied. Such is the case under the present low standard, and such will be the case under any standard whatever. There are, and always will be, boys who from

poverty cannot hope to acquire the preliminary knowledge necessary for the study of a scientific course. It is their misfortune, but a scientific education is only one of many things denied to them.

Beginning with boys of little preparation and study before seventeen years of age, be they poor or rich, there must be a sifting somewhere of about 65 per cent. If not accomplished before, it must be done after entrance to the Academy. The present system of appointment is not based upon any general method of selection, and at least one-half of the appointees are, in general, very little, if any, above a similar number taken at random. In such wheat there is much chaff. The sieve must be applied sooner or later, and the sooner it is done the better it is for all concerned.

The 48 per cent. who graduated from 1878 to 1887 could have received much more instruction had they not been retarded by the 52 per cent. who failed after entrance.

There are rare and exceptional cases of appointees entering the Academy with little or no knowledge above the present requirements, and who subsequently achieve great success.

Under the same low standard, fifty to sixty or more barely gain entrance each year only to fail. Important and necessary instruction is omitted, and the graduate is somewhat deficient in some valuable professional branches. Without the educating experience of a war, an average graduate is inclined to underestimate the importance of subjects not taught at the Academy.

The military status and military knowledge throughout the country is largely influenced by the course of instruction at West Point.

The preliminary steps in case of a war will depend greatly upon the knowledge imparted at the Academy.

In case of necessity a liberal country reasonably expects officers who have graduated at the Academy to be fully qualified for the occasion.

We are aware that with the present low standard of admission it is impossible to properly equip the cadets for beginning their profession.

Other important nations are thoroughly instructing their officers in everything that pertains to war, and it is impossible to estimate the consequences and damage that might result to this country for want of the knowledge which now gives way to ignorance.

The question for the Government and people to consider is whether they can afford to improperly educate less than fifty per cent. of those admitted for the sake of a few rare and exceptional cases.

Considering that the proposed standard includes only the general culture and attainments which constitute a fair English education now attainable from public schools, and which indicates a reasonable promise for future developments; and considering that the best interests of the nation require a much higher standard than the one proposed, the placing of the Academy well within the range of free public schools is certainly sufficient sacrifice for the sake of the few who are so unfortunate, and the many who are so idle, as to fail to acquire what is within their reach.

For many years most graduates have felt and appreciated the fact that the standard for admission should be raised. With a system of instruction believed to be as good as any yet tried, the corps of professors, instructors and students at the Academy have endeavored by extra efforts to make up the discrepancy between the entrance qualifications and the subsequent course.

With a spirit of conservatism and submission to authority, the Academy has remained quiet hoping that the number of unavoidable failures, comparisons with the standards of similar institutions, reports and recommendations of distinguished Boards of Visitors, the opinions of officers of experience and the necessities of the country

and period, would sooner or later bring the attention of the proper authorities to the consideration of the hopeless task which for some years has been imposed upon it. But the time has now come when I believe that we cannot, in justice to the Academy and ourselves, continue to remain silent. The Military Academy must meet the requirements of the present state of military science, or it will decline into a preparatory school for others of higher grades, which will surely be developed to meet the necessities of the age.

It is impossible for the Academy to remain stationary while the art and science of war progresses. The question is, shall the Military Academy be continued for the accomplishment of the object for which it was created, or shall new institutions replace it? Shall West Point be used for educating and producing trained young men qualified for attaining with experience the highest requirements of the profession of arms, or shall it become a preparatory school?

These questions cannot long remain unanswered. Unless steps are soon taken to relieve the Academy from attempting the impossible task of creating in four years scientific officers from boys 17 years old not possessing the necessary preliminary knowledge which is attainable from the free schools of the country, it will surely retrograde towards the level of its rejected material.

II.

"Organization and Tactics":—A Review Reviewed.

Captain A. L. Wagner, 6th U. S. Infantry.

THE review of a book is supposed to present to readers not yet familiar with the work a fairly accurate summary of its contents and of the views of the author. Incidentally it may be made a medium for setting forth the ideas of the critic and a means of discussing interesting or important topics relevant to the subject considered. If the critic see fit to exaggerate the incidental features of a review to such a degree as to smother its main object under an exposition of his own ideas, it is merely a matter of taste, not ordinarily calling for comment; but when his critique is so worded as to misrepresent the book, or to convey the impression that the opinions set forth therein are not in accordance with generally-accepted or well-founded principles, the author cannot, in justice to himself, accept the review in silence. For this reason, I feel it incumbent upon me to reply to some of the comments in Captain Chester's review of "Organization and Tactics" in the last number of the JOURNAL OF THE MILITARY SERVICE INSTITUTION.

The critic objects to the abolition of the army artillery reserve, and regards the organization of the artillery into corps and divisional artillery alone, as an evidence that the functions of an artillery reserve are very generally misunderstood. This may be true, perhaps, for it is certain that, as Captain Chester understands the subject, it is misunderstood by many of the ablest artillerists of the present day. Owing to lack of space, I will reserve my discussion of this subject for a separate paper, in which the matter can be given the attention that its importance deserves. For the present, after repeating the undeniable fact that the army artillery reserve has disappeared from the armies of all the Great Powers, I will be content to say that it was discarded by the Prussians after a practical demonstration of its inutility in 1866, and by the French after they had become convinced by experience of its impotence in 1870; that it is not recommended by a single eminent artillerist of the present day; that it is condemned by such weighty authorities as Pendleton, Alexander, Von Schell, Hohenlohe, Bronsart von Schellendorf, and Von der Goltz; and that such an organization is not in accordance with the light artillery tactics prescribed in any civilized army at the

present time. If my views on this subject be wrong, I have at least the satisfaction of being in illustrious company. I cheerfully grant the critic's assertion that "not every European shoe will fit the American foot," but I would remind him that, in this case, the shoe is primarily of American manufacture, the artillery reserve having been discarded in the Army of Northern Virginia, to the great satisfaction of the most eminent Southern artillerists, some years before it disappeared in Europe. Captain Chester would evidently have an artillery reserve which is not a reserve, an aggregation of batteries held in hand as a "thunderbolt," and at the same time hurried into action so early that the reserve batteries would generally be the first engaged! When a force is found that can successfully carry out these antithetical functions the problem of eating one's cake and having it too, will surely have been solved.

"Working out a theoretical attack," says the critic, "often leads one into conflicting statements. The fact, for instance, that an infantry attack must have an artillery prelude and demands the presence on the spot of 'a superior force of artillery' must have been overlooked when the author dispensed with an artillery reserve in his army organization. Where is that superior force of artillery to come from? The divisional and corps artillery will be opposed to the divisional and corps artillery on the other side, and as there is no artillery reserve, the attack must be made either without artillery preparation or abandoned altogether." The critic seems to labor under the delusion that the distribution of the artillery reserve implies a diminution of the entire force of artillery. The number of guns with an army, as set forth in the chapter on "Organization," is very much greater than the usual proportion that we had during the War of Secession, and in the theoretical attack a superior force of artillery has not been overlooked at all. It is expressly stated on page 344: "As the assumption of the offensive implies a superiority of force on the part of the assailant, it will generally be practicable to concentrate a superior artillery fire upon parts of the enemy's line from the first." This superiority is sought in the early and vigorous use of every available gun on the part of the assailant—just such a superiority of fire as the Germans (without an artillery reserve) brought to bear on St. Privât—just such a superiority as they had (*sans reserve*) at St. Menges (Sedan)—and just such a superiority as they did *not* have at Königgrätz, where they had a great lumbering reserve that failed to get into action at all. Neither the Germans nor the Confederates had any difficulty in combining the artillery of the different army corps, nor in utilizing the artillery of one or more of the corps in reserve for such reserve artillery as they deemed necessary; and there is no reason why we should have any difficulty in doing the same thing. With these remarks the subject of the artillery reserve may be left for the present.

Captain Chester objects that I do not take into consideration the quality of the infantry in determining the size of the artillery contingent. As an *important* factor, I do consider it, as the critic might have discovered had he read pages 16, 276, and 282 of "Organization and Tactics." As a *controlling* factor, I have not considered it, for the reason that I do not believe it to be such. I think I have stated the controlling consideration in the case by saying, "While the proportion of artillery to infantry cannot be definitely fixed, it may safely be prescribed that the guns with an army should be as many as can be promptly brought upon the field of battle and effectively used there." No infantry can be so good that it can afford to dispense with a single available gun; and no infantry, either good or poor, can be helped one whit by attaching to it a lot of guns that cannot be brought into action before the battle is lost.

Objection is also made to my statement that machine guns should be a part of the general artillery command. It would be interesting to know where the critic would assign them, or whether he would rule them off the field altogether. I do not assume for one moment that these guns should be combined with field guns, and I expressly

state that they should be used in separate batteries. Does the critic think that infantry or cavalry officers would be better qualified for the command of these batteries than artillery officers? For my part, I can see no reason why artillery officers should, would, or could, object to such a command, which is more analogous to light artillery than to any other arm; nor do I see any more impropriety in having the machine guns thus commanded than in placing the ammunition column, including its enormous supply of small arm ammunition, under the command of artillery officers, as seems to be done the world over.

"But," the critic says, "the abolition or distribution of the artillery reserve is not the only startling suggestion in the book. The author declares, and we are bound to believe that he does so on tactical grounds, that every regiment of infantry, cavalry, and artillery in time of war should have a depot battalion." Why there should be anything startling in this statement, it is not easy to understand. Surely the critic cannot be ignorant of the evils resulting from the deplorable methods of recruitment that obtained in our armies in the War of Secession! Nearly eighteen years ago, General Upton, who was an earnest advocate of the three-battalion organization for infantry, said: "If we adopt the three-battalion organization in peace, we shall have to abandon it in time of war, unless in connection with it we establish a depot, and a system of recruitment which shall insure a steady supply of reserve troops." This was also approved by General Sherman when he said, "The German method of recruitment is simply perfect, and there is no good reason why we should not follow it substantially."

Captain Chester objects to my definition of strategy. I acknowledge unreservedly that an accurate and comprehensive definition of the term is difficult, and the diffidence with which I put forth my definition is equalled only by the confidence with which I invite a comparison of it with the one offered by my critic. My definition is as follows: "Strategy is the art of moving an army in the theatre of operations, with a view to placing it in such a position, relative to the enemy, as to increase the probability of victory, increase the consequences of victory, or lessen the consequences of defeat." The critic would substitute the following, "Strategy is the art of putting an adversary at a disadvantage." The latter definition is certainly short, and if it had the merit of clearness and accuracy it would be altogether admirable: but if it be correct, what is the difference between strategy and tactics? Is it not the great object of tactics to place the enemy at a disadvantage? If the critic's definition be correct, it must be strategy when, in battle, we make an assault upon the enemy's flank or pierce his centre; it must be strategy when we place military obstacles in front of a fortification; and it must be strategy when we arm our men with a rifle superior to that of the enemy; for in all these cases we are surely placing our enemy at a disadvantage.

The reviewer's comments on the infantry attack as described in the book cannot be allowed to pass unnoticed. He would, apparently, have us suppose that the successful attack of six companies shoulder-to-shoulder, at Spicheren, furnishes proof of the needlessness of extended order. He has evidently forgotten the experience of the Prussian Guards at St. Privât, and the bloody lesson taught the Russians at Plevna; he does not, perhaps, remember that the extended order enabled the Prussians at Sedan to effect what they were unable to do in close order, even with a great sacrifice of life, at Gravelotte; and he forgets that Skobeleff's success in 1877 was mainly due to a judicious use of an extended order formation. The critic would evidently have us believe that front attacks are altogether out of the question. Now, if a flank attack be made, and the enemy succeed in effecting even a partial change of front—in other words, unless the flank attack be a more complete surprise than we can ever be justified in expecting—what on earth will it be but a local *front* attack? As the

enemy's attention must be chained elsewhere, in order that the flank attack may be made with any chance of success, a front attack becomes necessary, even though it be a feint, and it becomes doubly more so when it must be pushed home to prevent the defender from throwing his weight upon the force making the flank attack.

"The four principles laid down on p. 105," says the critic, "are all very well, but they should be prefaced with a demonstration that a position must be attacked in front and over open ground absolutely devoid of cover or concealment." The best answer to this is a quotation of the principles in question:

"The object of the attack formation must, then, be to arrange and move the troops so as to escape destructive losses and reach the enemy's position with a force superior (or at least equal) to that of the defender. To this end it must be such as:

"1. To enable the troops to make the most telling use of the rifle, and thus diminish the effect of the enemy's fire by subjecting him to heavy loss in return.

"2. To present the least favorable target to the enemy and profit by the sheltering features of the ground.

"3. To admit of celerity of movement and thus minimize the time of exposure to hostile fire.

"4. To be able to deliver a heavy shock at the end of the fire action."

The reviewer would then have us discard all these principles, when the ground is not devoid of cover and concealment! In other words, he would not have his troops so formed as to enable them to make the most effective use of their rifles; he would not have them so formed as to profit by the sheltering features of the ground; he would not have them in such a formation that they could move with celerity and deliver a heavy shock at the end of their fire action. In the name of all tactical common sense, what *would* he do?

Again, the critic says: "It is so easy to lay down rules—to say for instance, that men should be instructed to utilize cover, and, also 'taught to leave it at word of command.' An easy way that to dispose of a difficulty. But how is a man to know that they will obey? That they do it promptly enough when they know that there are no bullets in the adversary's guns is no proof that they will do it in the deadly zone during a battle. Such things cannot be taught." Now, in point of fact, the Germans teach their men to leave cover at the word of command. It is very probable indeed that when the bullets are whizzing rapidly and the enemy's fire is very deadly the men often will not budge from their shelter, but the chance of their doing so is much greater when they have been habituated to leaving cover at command under ordinary circumstances than when everything has been left to the impulses of the moment. After the repulse at Cold Harbor, another attack was ordered, but the men stood silently in ranks and refused to move forward. Perhaps the critic would deduce from this that it is useless to teach men to move forward at command, because "there is no proof that they will do it in the deadly zone during a battle."

"The frontal attack by infantry as prescribed in the Drill Regulations and discussed in this book," says the critic, "has produced considerable diversity of opinion among military men in this country. Many believe that it cannot stand the test of battle." Very true; that diversity of opinion is recognized by me and is duly set forth in the appendix on "Recent Changes in European Infantry Tactics," which (with several other chapters) the critic has seen fit to ignore entirely. But I deny the accuracy of the reviewer's statement that if the system now prescribed can stand the test of battle "it will be a clear demonstration that two-thirds of the company officers are

superfluous." Any one at all familiar with the tactics of infantry knows that in extended order fighting the company officers are more necessary, and have more to do, than in the old days when they merely stood behind the line as file-closers.

The critic says: "Many of the apparent departures from accepted principles are only apparent, and can be sifted out easily by the careful reader. As an illustration of what we mean we quote from page 325. 'It is preferable, we think, to distribute guns throughout the whole front.' Most artillery officers believe otherwise. We suffered terribly from that heresy during the early years of our war." The careful reader might possibly be able to sift the critic's meaning in this case, but the garbled quotation and the comments following would probably give the impression that I advocate a distribution of the guns throughout the whole front. No inference could be more misleading or more unjust. I endeavor to set forth in the strongest terms the necessity of massing the artillery, but I also, more than once, invite attention to the fact that "massing guns does not consist in deploying them in a well-dressed line, as at a review, but in keeping large numbers together under unity of command and with a common object, and posting them according to the facilities offered by the features of the ground." In order to protect myself from the unjust inference that would naturally be drawn from the critic's comments on this part of the book, I will ask the reader's indulgence in offering the following quotation from p. 325 of "Organization and Tactics":

"It may be desirable to unite all the artillery of the army corps in one continuous battery, in which case the corps artillery should ordinarily be kept together, being flanked on one side by one battalion and on the other by two battalions of divisional artillery. Such a great battery, aggregating, as it would in the case of an army corps, some 120 guns is, however, rarely formed. In regard to such a consolidation of all the artillery of an army corps, Von Schell says: 'The artillery of an army corps occupies a very large front, and the nature of the ground seldom permits of its being formed in a continuous line; besides which, such lines have their weak points. They offer an immense objective for attack, are difficult to supervise and move, and sometimes it is not easy to protect them properly by means of infantry. We may reasonably expect, however, that any attacks on them will be defeated, if the enemy advances directly upon them without having first subdued their fire. It is preferable, we think, to distribute the guns throughout the whole front, taking care always not to split up the divisional and corps artillery groups. The concentration of fire of such separate groups will not to any extent be impaired, and a flanking fire at a range of 3000 metres and more will have considerable effect.' But although the concentration of the entire artillery of an army corps into one continuous battery is not often desirable or practicable, the separate groups should be so situated as to support each other, and each should consist of *at least* one battalion."

I do not anywhere, nor in any way, suggest any formation of the artillery of an army corps (including both divisional and corps artillery) in which the different groups will not consist of from twenty-four to seventy-two guns each, nor any combination in which these groups will not be *within supporting range of each other*. There is absolutely nothing in the book that can encourage the "heresy" of dissemination of artillery from which we suffered in the early years of the late war; on the contrary that heresy is constantly combated.

But this is not the only case in which the critic's comments are misleading. Almost at the very beginning of the critique he says: "The author believes that under certain specified conditions, 'war would become almost an exact science,'" and then proceeds to deny that war could become anything of the sort, not taking the trouble to observe that the specified conditions are *impossible* ones; that I thereby deny that

war could be anything like an exact science; and that I expressly state, "Human nature alone remains the same: all else is subject to many and great alterations."

Nor is this all. The critic proceeds to write: "Then these simple rules for fire-discipline are not so easy to obey under line of battle conditions as some people may imagine. The man that rammed twenty-three cartridges into his musket at Gettysburg without discovering his mistake was no coward; but he was not in a condition to give much attention to even 'simple rules.'" Now the natural inference from this would be that I undertake to prescribe simple rules for fire discipline with the supposition that they could be easily carried out in action. The words of the book are as follows: "The observance of these simple rules in action is a matter of the greatest difficulty. In the excitement of battle the men become so absorbed in the act of firing that they perform the motions automatically rather than intelligently, and seem to be actuated by a desire to shoot rapidly rather than with effect." I then cite instances from the battles of Gettysburg, Königgrätz, Majuba Hill, and the Wilderness to illustrate the difficulty of observing even the simplest rules of fire action in battle.

The sweeping disapproval of all works on the Art of War,* with which Captain Chester begins his review may be dismissed without comment; and as to his declaration that "experience cannot be purchased second hand," it is sufficient to remark that many distinguished men, of great experience themselves, think that it is possible to profit by the experience of their predecessors. It would be interesting, but hardly profitable, to speculate upon the probable condition of the art of war if every commander had to learn the art from his own experience.

As to the lament that text writers ignore the psychology of war, I am sure that it will be manifest to even the most careless reader of "Organization and Tactics" that I have tried throughout the entire work to emphasize the importance of moral influences in war. Further than this I did not feel called upon to go, as I preferred to leave an exhaustive consideration of such subjects to those profound philosophers who, despising tactics, ignoring strategy, and scorning the experience of others, would present the subject of war as an abstruse psychological study.

The critic is pleased that I am no believer in "book-made generals." It all depends upon the definition of book-made generals, whether he has just grounds for the doubtful compliment that he pays me. I do not believe that a thorough knowledge of all the military books in existence, or of all other lore in the world, could make a general of a man who did not possess a natural genius for war; but, however great a man's innate talent for war may be, his fitness for command will be increased if he seeks, by judicious study, to profit, as far as practicable, by the experience of others.

III.

"The Infantry Drill Regulations."

Brigadier General W. B. Bend, N. G., S. M.

I THINK that it is generally conceded that the main object of drill regulations is to change formations and get troops into position to fire, as quickly as possible, and for this reason I must take issue with Lieutenant Noyes, because, I do not think that movements can be executed as well under the system he proposes as they are now.

His proposed commands are, as a rule, longer than those now in use, without conveying to a posted officer any clearer idea of the movement to be executed, and I do not suppose that the commands are for the information of the enlisted men.

* "The codification of an art for the purpose of instruction therein."—CHESTER. Ed.

To take up his proposed changes seriatim:

Paragraph 289: "Form line facing right, right ground," does not convey anything more than "On right into line."

Paragraph 290: For "Right front into line," Lieutenant Noyes substitutes "Form line, facing front, right ground," and he prescribes a mode of execution which involves a loss of time, and by which nothing is gained.

The proposed changes in paragraphs 291, 294 and 295 are so similar that the same objections will apply.

Paragraph 298: In place of "Companies right," a movement easily and quickly executed, Lieutenant Noyes would first form column of fours, then have each company change direction to the left and execute on right into line, taking three movements to accomplish what is now done in one.

If column of companies is to be dispensed with entirely, paragraph 304, as well as a great many others, can be struck out of the regulations, but I hardly think that we are prepared to do this.

Paragraphs 323 and 325: The only effect of the proposed changes is to make the men march over two sides of a triangle instead of over the hypothenuse.

Paragraph 339 and 344: I cannot see how it is any easier to execute on left into line than fours left.

Paragraph 346: "Form line" is perhaps more explicit than "Deploy column," but what is the advantage of making the first company execute fours right, and on left into line, instead of standing fast? The movements of the other companies are not in the least simplified by the proposed changes.

Lieutenant Noyes proposes to make up for the loss of time incident to the changes he advocates, by executing all movements in double time, but the movements now prescribed can be just as well, and frequently are, executed in double time, so that the claim of loss of time stands.

The National Guard will be glad to see any changes of the drill regulations which will give increased simplicity and celerity to movements, but unless I am much mistaken, those proposed by Lieutenant Noyes will have the opposite effect.

IV.

"Reform Needed in the Paper Work of the Quartermaster's Department."

Major Adna R. Chaffee, 9th Cavalry.

IN an article published in No. 73 of the JOURNAL OF THE MILITARY SERVICE INSTITUTION, entitled as above, and the subject previously more fully exploited in the *United Service Magazine* (April, 1893), Lieutenant Palmer, 24th Infantry, exposes to view in a very skillful manner a great and long standing official evil; an annoyance which because of its many years of continuance with no adequate attempt at relief has become a nuisance, to use the least objectionable word that to us seems properly to designate a condition of affairs that appears no longer bearable without protest.

When to the system of Property Returns rendered to Washington is coupled another which chief quartermasters have, that of requiring copies of returns being sent to them, and to these is added other accounts, reports, etc., for chief quartermasters, of which the number is large; add also the paper work of the office pertaining exclusively to post affairs, we find that the post quartermaster is in papers to his ears at all seasons of the year. Inefficiency when found to exist, disorder in storehouses and nearly every other cause for complaint against officers doing duty in the Quartermas-

ter's Department at posts is due, very generally, to the fact that a large part of the officers time is expended on papers. If any question this statement, it will be those who are wilfully blind to facts, and responsible in more or less degree for the existence and continuance of our cumbersome and costly system of quartermasters paper work. The progress of the department, in its paper work, to better ground, may be compared to China in its march toward modern Western civilization—a little backward when in motion. Newspapers ascribe the disasters happening China to its steady adherence to *ancient* forms, and refusing to adopt progressive ideas, particularly American ideas, for an example of which, applicable to our purpose, we commend the theory and examples presented by Lieut. Palmer in his two articles, where he shows in what true progress consists as it affects his subject. He is for consolidation and elimination, but retains everything pertaining to necessary information! The progressive thought respecting the subject that officers of the Quartermaster's Department appear to be best able of entertaining, if we base on actions, is *expansion*, adding new forms—consolidate none, eliminate none. This may be progress, but if so it is of the sort that will break the back of the camel. Lieut. Palmer formulates three axioms, all true, and he might have added: That multiplicity of papers is a poor guarantee against dishonesty.

Honesty being a virtue inherent with most men, dishonesty a vice, evidence of low moral character, happily found, comparatively speaking, in but few men, *paper forms* effect neither to any marked degree, yet it is no doubt a fact that many papers are made for no other reason, apparently, than that the idea prevails, with some, that officers are in that way made to be honest. Quite absurd! I remember asking a prominent officer of the Quartermaster's Department, why he required from post quartermasters an account current without vouchers, and what use it was to him. He wanted to know, wanted to see whether or not those officers accounted for funds received by them. As a matter of fact he could determine nothing in the accounts when before him, beyond his own individual transactions with the officers—his own transfer of funds to them—while the accounts current showed funds from other sources—sales of fuel to officers and of property at auction. He could not possibly tell whether the amounts stated in the accounts as received from sales were correct or not, but all the same this absurdity went on every month of every year. It is the business of examiners in Washington to compare accounts. Copy of Property Returns for chief quartermasters is another imposition put upon post quartermasters. In one department at least, orders require troop and company commanders to send copies of their Property Returns to the chief quartermaster. Possibly once a year reference may be made to them for some trifling purpose. When a quartermaster estimates for anything he is required to show in the estimate how many of the articles he has on hand. What more is necessary or needed to base conclusions for supply wholly or partially? Quarterly the post quartermaster sends up a list of stores that he has on hand not required for use at his post, and monthly reports the amount of transportation, fuel and forage on hand. The three papers last named are useful extracts, the essence of returns, all that seems necessary for the information of the chief quartermaster. Copies of Property Returns could be and should be discontinued.

The War Department directs in General Orders that estimates shall be made in duplicate, triplicate, etc., as the case may be, and one would think that the number of copies so determined should be sufficient for the transaction of business with post quartermasters. Not so, in some instances at least. Out goes the chief quartermaster's mandate to make estimates in triplicates, quadruplicates, etc. One being for file in his office in order that he may retain a memorandum of the fact that he recommended the Quartermaster General supply 36 instead of 48 lead pencils asked for by

the post quartermaster. Who cares a rap what recommendation he made; what possible benefit to any one to retain in an administrative office, a copy of the estimate? The quartermaster obtained 36 pencils instead of 48 and *he* knows that final action on his estimate cut off 12 pencils. Let the chief quartermaster make the extra copy if he wants it—the work would then be properly located; the work would not be done! Several other reports are rendered to chief quartermasters which are of doubtful utility, but space does not permit of further citation, those mentioned being sufficient to show that in addition to *reforming* the Property Return papers which Lieutenant Palmer shows may be accomplished with safety and in the interests of business methods and great economy, the rough hand of authority should be laid upon a large crop of "copies" not referred to by him. They must be abandoned in war, which is proof that they are not necessary during peace.

The source of the mischief is par. 824, A. R. and with due respect we ask attention to the intended signification of the word "Only," and to the fact that it is by order of,—etc., that extra copies of returns, accounts, reports, rolls, estimates, etc., etc., are obtained by chiefs of staff departments.

Lieut. Palmer is not so radical as I would be with his Exhibit A—first page. I would blot out the daily extensions of issues there shown; they are unnecessary for any useful purpose. It is sufficient to show daily the number of horses and mules present and the number absent, and the total for the month.

Take Exhibit A. add up columns of horses and mules and we have 30 horses, 1110 mules present, 12 mules absent, total animals 1152, all entitled to an allowance of forage and bedding which may not be exceeded without special authority. Then, the sum of $30 \times 12 + 1122 \times 9 =$ grain forage in pounds, 10,458— report correct; $1152 \times 14 =$ hay, 16,128— correct again; $1152 \times 3\frac{1}{2} =$ straw, 3840— error, over issue 191 pounds. Any less totals, quartermaster did not issue full rations or did not forage absent animals. Three hundred and ninety-three figures might be omitted from the page without harm resulting, chance for error greatly reduced, the quartermaster could quickly test the figures of his clerk and the examiner in Washington could O. K. three statements in less time than he can now do one adding of each column separately. We object not at all to paper work that is useful—necessary; but every thing unnecessary, no matter what its form or use, ought to be discontinued. Lieut. Palmer deserves hearty thanks and we hope his labors will not be in vain.

Captain James Regan, 9th U. S. Infantry.

Lieutenant Palmer's article published in the January number of the JOURNAL OF THE MILITARY SERVICE INSTITUTION is indeed a valuable paper, and could, in my opinion, be written only by one like himself, who had had the experience of years as A. A. Q. M. Ideas like those presented in this paper have coursed through my brain in a general indefinite way, but I have never undertaken the task, a serious and difficult one it must be admitted, of systemizing them. How admirably Lieutenant Palmer has succeeded in doing this must be forcibly evident to every officer who has served a tour in the Quartermaster's Department. While A. A. Q. M. at Fort D. A. Russell in the 80's I had the satisfaction of presenting in my annual report to the Quartermaster General, a form by which in one quarter three duplicate vouchers, a set for each month was made to take the place of 225 separate vouchers. The following will make this clear: Say there were twenty-five officers present for duty; by the system then in vogue, each of these 25 officers would sign two vouchers (Form 49 to Abst. Z) for the A. A. Q. M. one retained and one sent with the return, and for the money paid him, each officer would receive a receipt, making in one month 75 separate papers, and for the quarter 225. The form which swept such a

mass of papers away was simply a modification of the "Clothing Receipt Roll," each officer signing a roll instead of the individual vouchers. Later the same modification was made to apply to C. C. and G. F.

This shows the unnecessary accumulation of papers, etc., and as a verification of Lieutenant Palmer's idea, I cite the following quarterly papers, without the extras, required at this post:

42.	Requisitions for Fuel, etc. (Form 38).	42
3.	Sales. Vouchers. (Form 33) In duplicate	6
3.	Statement of Forage expended. (Form 36) In duplicate	6
	Abstract G. (One in book).	1
29.	Requisitions for Stationery. (Form 41) In duplicate	58
	Abstract H. (One in book)	1
1.	Requisitions for Horse Medicines. (Form 51)	2
	Abstract L. (One in book)	1
	Total	117

Lieutenant Palmer's reasoning upon this condition of affairs points out its unbusinesslike character.

While on this subject I shall point out another saving of papers, in the issuing and accounting for clothing.

Take for example this Post, Madison Barracks, of Hd. Qrs. and eight companies.

Requisitions in duplicate for each company, etc., every time clothing is drawn for the entire quarter	72
From these as a basis the A. A. Q. M. makes invoices and receipts in duplicate making for this transaction	144
Company commanders to cover their responsibility make 36 receipt rolls in duplicate.	72

These papers must be entered upon abstracts and returns. Now to do away with this great mass of papers, let the company commanders make the Receipt Rolls, with list of sizes appended, and submit them to the commanding officer for approval, after which they are sent to the A. A. Q. M. to be issued upon in bulk according to totals in the Receipt Rolls. These rolls are then taken to each company and the clothing issued as now required, being duly witnessed by an officer. The value of the clothing having been entered in the "Clothing Book," the Rolls are returned to the A. A. Q. M. with the certificate of the company commander that the clothing has been duly issued and charged. The duplicate rolls thus returned serve as vouchers for the A. A. Q. M., making the 72 Rolls above noted, but doing away with all the other papers: 72 Requisitions, 72 Invoices, and 72 Receipts, or a total of 216 papers, multiplied by the number of organizations in the army and we have no mean total. And besides it does away with the company commanders taking up and dropping this property in the same quarter, in fact with the adoption of the following it would also do away with Q. M. returns being rendered at all by companies.

Estimates made now for Q. M. stores, number 12 separate papers, which should be made in two; the articles to be arranged under their proper appropriations.

What, may I ask, is a regimental quartermaster for,—strictly as such? In fact, as such, in peace, his duties are *nil*. Why not then put him to some use? Do away with the Q. M. and C. C. and G. E. Returns in the companies, and require this officer to assume these responsibilities, carrying all regimental property of whatsoever character on his returns. This would give employment to the regimental quartermaster sergeant. There can be no question about the feasibility of this recommendation, because for his own protection he can obtain the formal receipts of the company com-

manders at the station of the regiment or those absent therefrom, all property to be invoiced directly to him.

For example Co. A is detached from Hd. Qrs., and the company commander finds it necessary to draw some C. and G. E. The articles are issued directly to the company, and the invoices and receipts with company commander's acknowledgment on the same, are sent to the regimental quartermaster. Under this system a company in the field would find itself unembarrassed, and the quartermaster in the rear would be in a position to attend to such details. Articles worn out, lost, etc., could be acted upon by boards of survey, inspected, and the papers in the case forwarded to the regimental quartermaster. This, in connection with Lieut. Palmer's idea of issuing regulation allowances direct without the exchange of vouchers can readily be seen would simplify matters very materially. A simple calculation will show what a vast amount of labor and papers would be saved thereby.

In view of the 2d axiom of Lieut. Palmer, it seems to me it would be an excellent idea to form a board of A. A. Q. M's. to take up this subject, "Q. M. Property" with authority to codify, modify, and submit a complete system. With such men as Lieut. Palmer on it we can imagine what such a system might be.

The difficulties of the 3d axiom are admirably surmounted by the excellent common sense recommendations of Lieut. Palmer in his article. I do sincerely hope they may catch the eye of some one high in power, and be subjected to a practical test. The ones in the periphery, the A. A. Q. M's., I am sure would be delighted, as the horse is when his load is lightened. It is no wonder that the young officer is appalled at the amount of work in which he finds himself involved when appointed an A. A. Q. M. at a large post. The duties of A. A. Q. M. and A. C. S. should never, except at very small posts, be imposed on the same officer, because it behooves a quartermaster, as Lieut. Palmer states, to be about and watchful, to prevent frauds on the part of contractors.

Yes, let us stop scolding and fault finding, and with the proper *esprit*, endeavor to perfect our system of accountability. The presentation of practical ideas, and the *modus operandi* of carrying them out is what we want, so as to avoid being "quagmired" and "hopelessly swamped" in time of war.

The accountability or paper work prevalent during the War of the Rebellion, although simplicity itself compared to what it is to-day, was, in thousands of cases, no doubt, a dead failure. In the teeth of such experience let us thoroughly clean house on the lines recommended by Lieut. Palmer. Let us in peace endeavor to simplify and condense so as to lessen our embarrassments in war. Let accountability be as rigid as the necessities of the situation demand. but let us do away as much as possible with "red-tapeism and the multiplicity of papers."

Captain C. J. Crane, 24th U. S. Infantry.

I have read with great interest Lieut. Palmer's article in the January number of the JOURNAL.

The complaint that post quartermasters have too much paper work to do is an old and just one. Besides there being required too many vouchers for his quarterly return, a great many of them being unnecessary, as shown by Lieut. Palmer, the post quartermaster is called upon for too many reports the information in which has been previously furnished in other reports or returns.

When those at headquarters need special information from their inferiors it seems easier and more satisfactory to have it in the shape of a new report rather than have it looked up in old reports previously submitted by the same officer or officers.

More than once I have heard a post quartermaster complain that he had previously furnished the information just required of him in a separate and new report.

Some years ago our post quartermaster congratulated himself upon a recent change of chief quartermasters. The new man was known to be in favor of cutting down the paper work of the army, especially in his own department.

Before many weeks had passed the post quartermaster had sent several reports which had not been required by his former chief, and the information in which could have been obtained, according to the subordinate, by examination of former reports submitted by him.

I am convinced of the truth of Lieut. Palmer's statement that "the head of the department is too far removed from the working details of the department to expect him to initiate needed reform," and that such reform "must be looked for from the circumference and not from the centre of the circle."

Those at the top having personally very little to do with the actual examination of a post quartermaster's paper work, they will not be likely to discover wherein any part of it is unnecessary, and they will be less likely still to work out the needed reform.

But "it is useless for a writer to attack old and fossilized methods, no matter how pernicious they may be, unless he can offer, as a substitute, something which is clearly and manifestly better than that which he assails."

The noticeable feature of Lieut. Palmer's article is his able explanation as to what paper work is unnecessary, and what method would be better.

A reform in the amount and kind of paper work required of a post quartermaster, as advocated and explained, would be of inestimable benefit to the service, and would lift a great load from the shoulders of many a line quartermaster.

The saving of work as shown in Exhibit "A" is very evident, and the voucher is as complete and full as seems necessary. The substitution of six papers instead of 103 is startling, but an examination of those substituted, as exemplified in Exhibit "A," is enough to satisfy one that nothing more is absolutely necessary.

That property returns are required too often seems to be a growing belief among officers, and reform in that direction is becoming easier with the abandonment of small posts and the certainty that the same man will be post quartermaster this year and the next too.

Lieut. Palmer's description of the property book answers well the purposes of a return, but in some instances it would be better for the outgoing quartermaster to have his papers with him, for no one else would be so apt as he to promptly straighten out any little discrepancy that may have previously escaped his notice.

An officer's returns are acted upon more promptly now than was the case in years gone by, and soon it may not be necessary for us, in our self-protection, to carry about with us the accumulated returns of many years.

The adoption of a property book system of returns, as explained by Lieut. Palmer, would most likely hasten the day when we could safely destroy all our old returns and have no fear of correspondence on account of any return more than two or three months old.

It is to be hoped that Lieut. Palmer's work will receive the great consideration it deserves, and that it may result in reform in the line indicated and advocated by him.

First Lieut. Carl Reichmann, 9th U. S. Infantry.

No one, I believe, who has done duty in the Quartermaster's Department, can help being struck by the force of Lieutenant Palmer's article on needed reforms in the paper work of that department, which appeared in the January number of the JOURNAL, and every line of which bespeaks the writer's experience and sound business sense. While it is admitted, that the present system is most precise, it is also true, that it is

most intricate and circumstantial, that it is based on the principle underlying our whole system of accountability for funds and property, *i. e.*, that every man entrusted with either is a rascal until he proves himself honest by his returns; and that the burden falls, in the first place, on the line officers who do the retailing and hustling, and whose duties are the most onerous, and facilities the meanest.

I cannot claim special experience in the Quartermaster's Department, having served in it but once and for eight months only. If, therefore, I undertake to say anything on the subject at all, it is only for the purpose of bearing out some of Lieutenant Palmer's statements.

When I took charge of the Q. M. Department at X., one of our southwestern posts, it was about the middle of the quarter; I found a good clerk and quartermaster sergeant in the office, also a forage master (civilian). The garrison consisted of one company of Indian scouts, two troops of cavalry and two companies of infantry, all colored except the scouts and one of the cavalry troops. Owing to the severity of the climate the troops returned to their proper stations after a tour of six months at X. There was therefore a constant coming and going of the troops composing the garrison, and, owing to Indian disturbances, constant arrival and departure of detachments from X. as well as from other posts, all of which magnified the in and outdoor work of the A. A. Q. M. The amount of property on hand was large and stored in tents and low canvas structures, therefore difficult of access, difficult to issue or verify. Hay and fuel were delivered by the Indians in such quantities as could be carried on the backs of ponies, burros or squaws; the forage master could do no more than to receive this kind of property. The post was an unusually active one even in the ordinary run, and neither the post Q. M. Sergeant nor myself could devote much time to office work, which devolved on the clerk. So long as the clerk, whom I first found in the office, remained there, all was well. Soon, however, his troop rejoined its proper station and he had to go. The next clerk, the best whom I could get and whom I was glad to get, wrote a fairly good hand, but could not do original work. He had been but a short time in the office, when he received a furlough to join his family which expected an increase, and for this latter reason I could, of course, not stand in his way, whatever the consequences for my office. After he had gone, no man could be found in the garrison who could be trusted to spell correctly and copy without gross errors. At the same time I filled four other so-called staff positions at X.

Meanwhile we were building wooden shanties for the officers to live in; the work was done by such "mechanics" as could be found in the post, the wheelwright acting as foreman. Funds were now allotted to the post for building waterworks, and adobe quarters for officers. I then accounted for funds pertaining to three different fiscal years. All the work of preparing such rough plans, specifications, estimates, etc., indispensable for making contracts and beginning the construction, had to be done by myself, and as I was entirely inexperienced in such matters, the work was rather difficult. Next I had to familiarize myself with all the trades entering into these constructions, building a lime kiln, selecting lime stone, burning lime, quarrying rock, laying pipes, setting boilers, etc. When I was ready to haul the rough material, Indian troubles required the services of nearly all my transportation, which remained absent until a week before the work of construction was to begin. I was then concerned in a sand pit one mile from the post, in a quarry two miles from the post, in a lime kiln seven miles from the post, in a post garden thirty miles from the post, and in a sawmill fifty-five miles from the post. The round trip to the latter required seven days and the roads were so rough, that of four wagons sent out three as a rule returned, the fourth having been broken up into spare parts to patch up the other three.

Inexperienced as I was, and new to so much responsibility, I, of course, "stood on

my head" for some time, but the work had to be done and was done; in fact, I took delight in the outdoor work notwithstanding that the thermometer would stand 115° in the shade at 9 A. M., and for two months never stood below 100° night or day, so that when the thermometer, one day, evidently through some mistake, did fall to 94°, I took a respectable cold. I say, I enjoyed the work. But when it came to rendering the various reports pertaining to the construction (in the case of every $100 shanty going up I had to certify three times per month in triplicate, I believe, that it really was going up), when it came to answering all the many inquiries from my superiors in the department, when gentle reminders came, that this or that important report due at such a date had not been received, when finally, by special and combined effort of all hands, a batch of these documents was gotten off on time only to be destroyed on the road by a stage-robber and the "gentle reminders of documents overdue" arrived after all, I felt discouraged. Nor did the three sets of money accounts rendered at the end of every month tend to encourage me. But the camel's back broke, when the end of the quarter came and I had to tackle those terrible quarterly returns: they were rather voluminous, very intricate and as yet somewhat of a mystery to me. They had to be made out in a canvas hovel, styled "office," in which the thermometer ranged between 125° and 130° all day, no matter how much brush we heaped on what we called the roof. What with the heat, calls from orderlies, employés, contractors, workmen, Indians, and goodness knows what not, in connection with all the outdoor work, the chances were decidedly against my becoming an expert in Q. M. papers just then.

My experiences are neither more nor less than what falls to the lot of any Western post quartermaster who undergoes his "initiation," and I recite them merely to impress those, who do not realize the duties of this Western post quartermaster, how profoundly grateful I for one should have been for any abbreviation or simplification of those terrible returns.

If a method of accounting for public property be devised, which, while equally precise, is much simpler, it is manifestly in the interest of the Government to adopt it. Lieutenant Palmer proposes such a method; he is an officer of extensive experience and exceptional ability in the Q. M. Department, and eminently qualified to be heard on the subject. His article is worthy of all the support line officers can give it, and of serious consideration on the part of the authorities.

First Lieut. J. F. Morrison, R. Q. M., 20th U. S. Infantry.

Lieut. Palmer has made in his article recommendations, the wisdom of which will be apparent to any one who has done duty as post quartermaster at a large post.

The "paper work" in a post quartermaster's office is absurdly large in quantity and much of it useless.

The consolidation of papers by use of the form proposed by Lieut. Palmer is very desirable It would save much labor, and answer every purpose now attained by a great mass of papers.

The recommendation to render returns but once in six months is a good one, but I think to extend the time to once a year would, possibly, be open to objections that would exceed its benefits.

His statement about Abstracts F and I are correct, the making of them is a waste of time.

Some improvements have recently been made, notably in allowing use of the letter press book, still the Quartermaster's Department is far behind the Subsistence Department in the matter of "paper work." In the Subsistence Department they have consolidated and simplified their papers until they are on a business basis, and I can see

no reason, except undue conservatism, why the same cannot be done in the Quartermaster's Department.

Certainly the duty falling to the lot of post quartermasters, would, as Lieut. Palmer suggests, be better done if the burden of unnecessary paper work could be dispensed with.

V.

"The Military Academy and the Education of Officers."

Professor Edward S. Holden, Director of the Lick Observatory (Class of 1870 U. S. M. A.)

WHEN Mr. Bush's polite invitation to write on this subject came to me I was absent on leave. I have therefore had the advantage of reading the aricles in the March number of the JOURNAL as well as Mr. Hubbard's paper printed in January. I am not sure that I can add anything of value to what has already been said, though I have thought much on the subjects discussed. I should like, however, to try to put one or two points over again, perhaps in a new light. I think Mr. Hubbard deserves the thanks of all graduates for raising the questions which have been discussed, and for his thoughtful remarks upon them. And first, with regard to the standard of the preliminary examination. Whatever may be the true ideal to be sought for in the Academy; whatever its methods should be; whatever its relation to the Graduate Schools, or to the Army; it seems to me certain that every person qualified to judge will agree with the general conclusions of Mr. Willcox's excellent paper, to wit, that the standard of the preliminary examination ought to be raised by including more subjects; and that this process should begin at once.

I personally see no reason why the schedule printed on p. 272 of Mr. Willcox's article should not be adopted, now, to take effect at a near future date. I think all will agree that this step is desirable; and, upon reflection, that it is practicable. The change might be made so as to excite opposition. On the other hand, if the Academic Board is once satisfied that this change is really desirable I feel sure that it could be brought about quietly and without friction.

There are one or two practical points worth mentioning in connection with such a change. It is well known to us all that many candidates are now thrown out at the preliminary examination. Those responsible for the Academy are continually obliged to explain to disappointed or angry parents, friends and Congressmen that such rejections are just. It is easier for them to do this when the standard is very low, as at present, than if it were higher, as proposed. Moreover, it is in the memory of us all that the army has gained distinguished officers in the past who could but just meet the old entrance requirements and who certainly could not have passed a more difficult examination. I now recall the names of at least two officers who graduated nearly at the head of their respective classes and who were barely able to pass their preliminary examinations.

I think the first point touched on above should be kept in mind and that every effort should be made to impress on the candidates, parents, friends, etc., the necessity for the change, and the absolute fairness and justice of the manner in which the tests are applied. I mean, in brief, that we should take some pains to appear to outsiders to have the merits which are, in fact, ours. With regard to the second point I think it can be met, and should be met, by making a part of the preliminary examination oral instead of written. The written examination serves to define accurate scholarship and will do for institutions in which scholarship is the sole or the chief requirement, which it certainly is not at West Point. We want men first, and scholars afterwards;

and the readiest way to know something of a young man's character is to hear him answer your questions.

We apply this principle in all examinations subsequent to the preliminary, and we judge of a cadet's proficiency very much by his manner of reciting, etc., and not alone by what he has written on the blackboard. Why should not the same test be applied at entrance?

It appears to me that these minor points are worth attention, at least; and that the major matter of a higher standard for entrance to be adopted as soon as practicable, will be judged to be feasible and expedient by all who are qualified to judge.

Supposing this to be true, we have, or we soon shall have, a class of candidates better prepared to go on with their course than those who are entering now. With better preparation at entrance and with the same admirable instruction throughout the four years we ought to be able to turn out even better officers than we do at present.

I, personally, have had excellent opportunities of comparing our work at West Point with that of three large institutions of learning. I have tried to say what I think of the comparison in an article on the U. S. M. A. in the *Overland Monthly* for July, 1891 (this article is in the library at West Point, and it is to be reprinted in a forthcoming report of the U. S. Bureau of Education), and I beg to refer to it in this connection.

Having our candidate entered at the Academy the question now is what shall we do with him? For what shall he be fitted? What shall be the ideal of the Academy? All that has gone before has been plain sailing and it is now that the personal element of opinion and judgment comes in. I have tried to indicate, in the article just referred to, what I think the ideal of the Academy should be; and I think the space at my command can be best used in simply stating my views without attempting to prove them; and furthermore in mentioning a few details which, in my judgment, are important in this regard.

I think the officers and cadets of the Academy need to keep constantly before them the fact that West Point is a special school whose main purpose is to turn out, year by year, competent, trustworthy and honest servants of the general government, skilled in the arts of war. For many years West Point was the foremost school of pure science in the land. It is so no longer, and it is not now desirable to seek to make it such.* For this reason I think that the higher mechanics—wave-motion, etc.,—now receive too much attention for a well-balanced course.

Analytical Mechanics, as taught by Professor Bartlett and his successor, is a splendid introduction of the cadet to the uses to which his pure mathematics may be applied. A comparatively short course of spherical and practical astronomy is necessary as a preparation for work in surveying and geodesy, which officers are frequently required to undertake. A very short course in descriptive astronomy is desirable as an information-study. The present course in molecular mechanics (wave-motion, etc.), seems to me to be far too special for a school like ours. I think a reorganization is desirable here so that light, heat, electricity, etc., shall be taught in a single course, under a single professor very much as the subject of heat is now taught, only with considerably more laboratory work on the part of the cadets.

Written reports of work performed should be exacted of all the cadets during the whole four years. These reports should be carefully corrected and returned to the cadet to rewrite if necessary. Similar reports will be required of the future officer and he must learn to make them at some time or another. Why not learn under competent teachers?

* See Report of the Board of Visitors, 1885, page 8.

The study of English expression should be fostered in every way among the cadets. This recommendation has been made over and over again, and it seems to me that it is still necessary.

I do not see how any changes of great importance can be introduced into the teaching of the last two years, other than the one which I have referred to (omission of wave motion, etc., in the second class year). Personally I should be in favor of entirely dropping Spanish from the course. My experience has not been sufficient, however, to give me any great confidence that such a change would be wise. The opinions of officers serving on our Mexican frontier ought to decide in such a case.

I now come to a point which seems to me of capital importance.

The most striking defect of our curriculum is, it seems to me, the lack of any theoretical instruction in purely military subjects during the first two years.

The cadet enters the Academy with the idea that he is to become a soldier. His practical instruction at drill, and indeed during every instant of his life, is thoroughly admirable. But for two long years he is not in touch with the theory at the base of all this practice. I would therefore issue to the entering cadet a copy of infantry tactics and provide that his squad-drill master should announce each day what the practical exercises of the next day were to be. The cadet would present himself for those exercises with the theory of them in his head. The same plan could be followed with advantage by the (commissioned) company officers. They should announce to their companies or to the battalion what movements were to be executed to-morrow. And when to-morrow came, many if not most, of the younger cadets would know exactly what was to be done, and would therefore profit by the practical exercises. Demerits freely bestowed for blunders would tend to make the younger classes quickly proficient. A similar plan should be pursued in reference to artillery and cavalry tactics. A half dozen lectures on the general theory which lies at the bottom of all systems of tactical manœuvres might be given, in camp, by the (commissioned) company officers and all formal recitations in the three tactics might be entirely abolished. What farces they were in my time, I well remember.

By abolishing these idle exercises of pure memory a small amount of needed time will be gained; but this is not my reason for suggesting the change. The real point is to show the entering cadet that he is, from the outset, expected to study and master by himself, the (simple) theory of tactics; that he is a soldier—a prospective officer—from the beginning.

If this point is considered carefully I think it will be found to be of real moment. We can foster in this way that intense professional spirit which is invaluable to the cadet and to the officer. In my opinion no special changes in the curriculum of the first two years (other than the omission of recitations in tactics) should be made. There has been a vast improvement in the methods of instruction lately and the work is done in a capital manner. The military character of the cadet is largely formed in the mathematical and other section rooms of the first two years.

There are several minor details of which I might speak; but I think I have covered the main points. It will be obvious that I, personally, think there is very little to change in our curriculum; and still less in our methods. The secret of our success is the proportionally large number of instructors to the whole number of cadets.

The feeling on the part of the cadet that he must hold himself in instant readiness for any duty in the section-room and out of it is the source of that cheerful prompt efficiency for which our army officers are distinguished above all others.

I have said, in brief, what I think the Military Academy should do. I think the business of the special schools of application at Willet's Point, Fort Monroe, etc., is to find out precisely where West Point leaves off, and to arrange their courses so that their

own students may supplement the West Point course as completely as time allows. If the Army is to have a school of Forestry, it should be attached to one of the graduate schools, not to West Point.

I am totally opposed to the creation of a higher Board of Control over the Superintendent and the Academic Board. The Chief of Engineers should be the Inspector of the Academy as he was from 1802 to 1866. It is well, I think, to retain the Boards of Visitors. Their influence is, indirectly, of great use to us.

I cannot close this brief article without an expression of thanks to my Alma Mater; nor without coupling to it the names of the men who made her and keep her great and admirable—Thayer, Mahan, Bartlett and their colleagues and successors in the Academic Board.

Lick Observatory, Mount Hamilton.
March 21, 1895.

First Lieut. E. M. Weaver, R. Q. M., 2d U. S. Artillery.

Lieutenant Hubbard's article in the January number of the JOURNAL OF THE MILITARY SERVICE INSTITUTION is a very carefully prepared paper. Evidently Lieutenant Hubbard has given deep study to the subject and has had access to authentic data. His arguments, criticisms and conclusions merit the thoughtful consideration of all who are interested in our system of military education.

It is especially pleasing to one who has long advocated a closer and more supplemental relation between the West Point course and the courses of the post-graduate military schools to have the question brought up for discussion in such a prominent way, and to have the arguments in favor of certain features of the proposition presented so clearly by Lieutenant Hubbard.

While agreeing with Lieutenant Hubbard on many points, there are one or two on which I differ with him, and my comments will be confined to these.

When Should the Graduate Go to the Post-Graduate School?—Passing over Lieutenant Hubbard's criticism of the crowded state of the West Point curriculum and his plea for a larger measure of practical work in connection with the theoretical course, I wish, particularly, to refer to one point, in regard to which, it seems to me, the author has gone astray from his ideal of a continuous and constantly progressive system of military education. On page 21, he advocates sending the West Point graduate to the army posts direct from the Academy, instead of to the post-graduate schools, and he postpones the selection of the arm of service by the graduate until he has served two years at his army post.

It must be admitted that it will be very difficult, if not impossible, to terminate this two-year army service exactly at the expiration of two years, and, if it be not so terminated, the graduate would be thrown out from entering his proper class. There is little doubt that the graduates would not be regularly detailed to the post-graduate schools after two years or, indeed, after any definite period. Once at the army post the efforts of commanding officers to retain young lieutenants and the disinclination of young lieutenants to sever ties which often spring up about the interval named, is a hard team to pull against. The chances are the whole question would reduce to precisely what obtains at present: when the time would come for the detail of a new class it would be a game of "catch as catch can"; such officers would be sent as happened to want to go or had not sufficient influence to avoid the detail. It is evident that a break occurs here in the complete scheme of education, and at a most critical point,—at the very threshold of the real professional training of the graduate.

The chief argument which has been advanced against sending the graduate direct from West Point to the post-graduate school is, that the young man needs a respite

from books for a period before entering upon the second stage of his education ; that the drive at West Point has been so steady and so hard that he has acquired a dislike for books and study and should in all propriety be given a little breathing spell before plunging him into other scholastic waters. This may be true, but those making use of this argument should be informed that the Artillery Council, in 1887, pointed out that it was possible to give the young graduate the interim desired free from books *at the post-graduate schools*, assigning him to certain practical work, which, while it would continue his training, would call upon him for no book work. He would take up in a practical way, matters pertaining to post and army routine, papers, board duty, court-martial duty, etc. ; and more thorough work in the special drills of his arm, and mechanical manœuvres for coast artillery, than was possible to give at West Point. Under this suggestion the graduate would report at Fort Monroe, Fort Leavenworth and Willet's Point after his graduation leave of absence and, the first year, *receive instruction* in these duties, rather than pick up the knowledge of them at haphazard, as he has to do at present, and as he would have to do under Lieutenant Hubbard's plan.

Not only would this remove the objection named above, but it would yield advantages not associated with the other plan.

When graduates are scattered to their respective posts under the operation of the present rule they come under the influence of as many different codes of instruction, drill, and discipline, in routine matters, as there are posts and commanding officers. At each post will be found some special construction of the regulations, guard duty, etc. ; the possibilities residing within the personalities of commanding officers as to matters of post discipline and post routine being as wide as the limits of human nature. The first ideas of these matters here acquired by young officers give character to their entire subsequent professional life. If the commanding officer be an energetic officer and a good disciplinarian the young man is fortunate, but if the commanding officer be inclined to laxity in his methods and be indifferent to military matters, the young officer will perhaps never overcome the bad effects of this service at his first post. It is, therefore, very important that the first post should be one free of these dangers.

In this connection it should be kept in mind that Fort Monroe, Fort Leavenworth, and Willet's Point *are army posts* in addition to being the points at which post-graduate military schools are located ; that these posts are always commanded by officers of the highest standing in each arm, and that they offer to a young officer every advantage for instruction, in the matters referred to, that any other army post could. At these posts young officers would have their first impressions of the service formed in a mould of the best type for each branch. They would find at them larger garrisons than they would be likely to find elsewhere, and there are important disciplinary and tactical influences associated with large garrisons. The young artillery officer would, furthermore, find at Fort Monroe, alone, the means to carry on much of the practical work contemplated, especially that connected with the new ordnance and mechanical manœuvres. Finally, the engineers have found the plan to work well for their school at Willet's Point, and there is no reason why it should not work equally well for Fort Monroe and Fort Leavenworth.

Methods of Relief for the Crowded Condition of the Course.—Undoubtedly no one can know so well as any member of the Academic Board how difficult a matter it is to determine what is best to include in a curriculum which, limited to four years, must take up rough grammar school boys at one end and put down at the other young men properly grounded in all that is requisite for a subsequent professional life as engineer, artillery, infantry and cavalry officers, and the ultimate determination of this point must be left stricily with the Academic Board. With this as the controlling thought I venture, with the greatest diffidence, to submit only one suggestion.

It is believed that the Academy is entitled to some measure of relief by raising the standard of the entrance examinations. This point has been argued so fully *pro* and *con* that in taking sides, one has only to assert his conclusion. It is assumed, that candidates could be required to pass an examination which would include practically the studies of the first half of the fourth class year. Not only would this accomplish an absolute and direct saving of time but also an indirect saving through the higher class of material entering, which would be able to take in and digest more matter in all parts of the course. These two considerations, together, would go far toward giving the relief sought. They would serve to advance all classes one-half year, leaving six months for the assignment of other work. Cadets at the end of the second year could, therefore, be as far advanced as they are at present at the middle of the third year; that is they would have finished the pure mathematics and have had six months of applied mathematics.

The question arises, would it not be possible for the Academic Board at this stage to decide which cadets of a class should take the further course looking toward entrance into the Engineer Corps and Artillery, and which should take the rest of their course with a view to entering the Infantry and Cavalry. It should be kept in mind that the first interest in this matter is that of the United States and the decision of the Academic Board should determine what that interest is, rather than the preferences of cadets. The Academic Board now determines who shall not go into the Engineer Corps. Why should it not determine affirmatively which cadets should go into each branch, and why should not this division take place before the end of the course? If this were done the engineer and artillery cadets could be classed together and the infantry and cavalry cadets together for the third year (second class year) for instruction in certain subjects. The former would require some of the higher applications of mathematics to fit them for dealing with civil and mechanical engineering problems, with gun construction and ballistics, but the latter could well be exempted from this mathematical work, and, in lieu thereof, could be profitably assigned to, say, a deeper study of general history, than now obtains, to the study of German, or to a larger measure of practical work in the laboratories. As to the abstruse mathematics now required of all cadets in the Department of Philosophy, it is believed infantry and cavalry cadets could acquire more knowledge, with just as much mental training, if descriptive text-books were substituted for the analytical ones now used.

In the last year the Academic Board would be in position to differentiate still further the studies of all cadets. In this year it ought to be possible to give to each division of cadets (engineer, artillery, infantry and cavalry) some instruction of a special nature which would, as it were, introduce them in thought to the opening studies of the post-graduate courses, and give them an inkling of the professional life beyond them.

While exempting infantry and cavalry cadets from the study of permanent fortifications and gun strains, for example, they would be enabled to take up the preliminary studies of some campaigns; it would enable engineer cadets to take up the study of some of the great civil and military engineering works, and artillery cadets could, perhaps, get some little insight into the principles and applications of machinery in mechanical engineering. Many artillery officers looking back on the undergraduate course have felt that it would have been an excellent thing if some practical instruction had been given us in the application of power to machinery and its transmission. If in our first class year we could have been placed on duty for a month, say, at some large gun factory or ship-yard for the purpose of simple observation and report, with the solution of some practical problem given—at the Bethlehem works or the Cramps' ship-yard, for instance, we would undoubtedly have received instruction of the greatest utility to us, in our service with heavy sea-coast guns and carriages.

The suggestion therefore is, that by raising the standard of the entrance examinations and by adjusting the studies after the second year to harmonize with the requirements of the subsequent careers of cadets, it is likely that it would be possible to meet some of the objections now raised against the curriculum of the Academy.

The Superior Commission.—On page 19 Lieutenant Hubbard advocates a "permanent" "superior commission" to "reorganize both West Point and post-graduate courses" and to "supervise the whole subject of military education in so far as it relates to officers and cadets."

The idea of adjusting and harmonizing the undergraduate and post-graduate courses is an excellent one and has been urged for a number of years by many, in different ways, but is it necessary to create such a *permanent* commission in order to accomplish it? Permanency begets conservatism, and, in course of time, it would be in order for a new reformer to suggest a still higher commission of the third order. It is believed the only *permanent* bodies necessary are those in direct contact with students, whether cadets at West Point or officers at the post-graduate schools,—the Academic Board and school staffs only need be permanent.

It is thought the reform in question might be approached with less disturbance through such a board as that appointed in 1885 to consider the question of coast defense. In March, 1885, Congress passed an act directing that "the President of the United States shall appoint a board, of which the Secretary of War shall be a member and president * * * to examine and report upon, etc." The board was appointed in May, 1885, and made its report to Congress in January, 1886. This report has formed the basis of our entire scheme of coast defense, and as a guide and standard of reference has been of the greatest utility to all who have had to do with coast defense matters. In the same way a board might be created by act of Congress to consider the subject of military education, with special reference to the relation of the undergraduate curriculum to the post-graduate studies, and *to the organization of the post-graduate schools on a basis of law* rather than the present precarious basis of orders and regulations. Such a board might be composed, besides the Secretary of War, of, say, the superintendent of the Military Academy, the commandant of each of the three service schools, and two prominent civilian educators. A report covering the ground indicated above emanating from such a board would serve at least to precipitate many considerations which are at present still in suspension and thus clarify the question for further action.

In this connection it might be well to call attention to the uselessness of one portion of the annual report of the Board of Visitors as appointed, organized and conducted under the present customs. Undoubtedly the Board does an excellent service in establishing good fellowship with Congress and with some few of our prominent citizens, and its report on the financial and administrative doings of the Academy will always be required, but it must be admitted that its report on or criticisms of the *scholastic features* of the Academy comes very near to being a farce. Why would it not be a good plan to separate this part of the report, as now made, from the rest, and turn it over to a special board of, say, three leading expert educators to be appointed by the President as other members of the Board of Visitors are, to visit the Academy at such a time and for such a length of time as may be necessary to report fully and intelligently upon the working of the curriculum in practice and the results achieved? Suppose, for example, the president of Harvard University, the president of Chicago University and the superintendent of the New York City Public Schools had been appointed such a board last fall, and that they had spent the month of December at West Point making observations of and taking notes on all matters educational; they could have reported intelligently on the effect of the West Point system on each of the

four classes, and would have gone home, not merely to point out defects, but, perhaps, to endeavor to put in practice some of the forces discovered in operation at the Military Academy. In other words, it is believed such an arrangement would be mutually beneficial: it would bring to the Academic Board fresh, each year, competent criticism of the nature and value of the work done at the Academy, and, by reaction, possibly something akin to the discipline and honest student work we get might be carried to and germinate among the civil students of the land.

In conclusion, I think we should all thank Lieutenant Hubbard for his excellent paper, and for having, through it, been the means of starting a discussion, which, it is hoped, will attract general attention to our system of military education.

Reprints and Translations.

HOW FAR THE LESSONS OF THE FRANCO-GERMAN WAR ARE NOW OUT OF DATE.*

By Colonel F. MAURICE, C. B.

From the United Service Magazine, London.

IF I may judge from my own experiences in selecting a subject for discussion, one is obliged to act very much as one does when one throws a bone to a dog, intending to watch how he will tackle it. One cannot tell beforehand precisely what meat he will find on it or by what end he will get hold of it, how much of it he will be able to crunch, and how much only to pick. One fully expects to see him turning it over and trying it in various ways. I say this because, in dealing with the deeply interesting question which has been assigned me, I want to turn the bone about a little. In the first place, extensive as the subject is already, I can hardly treat it rightly without extending it forwards and backwards. By extending it forwards I mean this, that since first I had the honor of receiving the invitation to speak here this afternoon we have found ourselves in presence of a new war which, to say the least, presents certain remarkable features, and it becomes interesting to inquire how far, from the information we as yet possess about it, we are either able to confirm the lessons of the past or to add to them new deductions. By extending it backwards I mean this, that in order to judge how far what was new in the experiences of 1870 is likely to be met with again in future wars, we must, to some extent at least, compare it with the wars of an earlier period. Changes have, since 1870, been very numerous. We can best estimate the probable effect of those changes in modifying the lessons we have deduced from 1870, by considering how far the peculiarities of the Franco-German War were the result of the changes which had been introduced before that time, and how far the more recent changes tend only to accentuate the differences from former wars or introduce altogether new conditions.

I do not think that we, any of us, much doubt what was the most remarkable feature of the war of 1870. Important as "organization' has always been in all periods of war, we could not help having it forcibly brought home to us that in this great war of our own times organization was playing altogether a new part, and had acquired an importance such as it never had before. It is hardly too much to say, as marking the contrast, that during the campaigns of the Peninsula Wellington triumphed, during the period when France was conquering Europe Napoleon triumphed; but that during the 1870 war, not Von Moltke, but the organization which Von

* A Lecture delivered on January 22d, 1895, before the Aldershot Military Society.

Moltke had created before the war and guided during it, triumphed. Was this an accident of that particular war, or does it represent something that under the modern conditions amid which we live is likely to be continually repeated? I do not think that it is by any means difficult to show that the conditions of modern life and the circumstances of modern warfare make it certain that this experience, *this* lesson of the 1870 war, will last at least for our time, and for any period of war with which we are likely to be concerned. I do not say that Napoleon's dictum, that "in war a man is everything, men are nothing," has ceased to be at all applicable to our time. Without the Von Moltke no effective organization is likely to be created; but I do say that the form in which the genius for war of *the* man is likely to be shown is that of creating and working a great organization rather than that of making dashing personal strokes upon a battle-field. How the circumstances of our time have brought this about has often been pointed out, and I need hardly now go over a many times told tale. It is more interesting to note that our actual experience since 1870 has fully confirmed this lesson of the war. That the war of 1877-78, between Russia and Turkey, confirmed it I, at least, certainly believe. It will assist me to crunch that very troublesome bit of my bone which is represented by the word "organization," and to arrive at an understanding of what we mean by it, if I ask you for a moment to call to mind the nature of that contest.

The Giant of the North hardly succeeded, even with the aid of the sturdy dwarf whom he was obliged to summon to his assistance, in crushing the breath out of the "sick man" sufficiently to make that feeble valetudinarian, who had been supposed to be *in extremis* before the contest began, sue for terms. He himself lay panting, groaning, and almost helpless after the effort it had cost him.

Now, certainly, this was not due to lack of that of which we have lately heard so much—undeveloped strength, undeveloped resources. I do not think that I am using a fanciful illustration if I say that what was wanting to the giant was something which may be very closely represented by that kind of development of undeveloped strength, undeveloped resources, which is at present being so admirably and scientifically given to the individual soldier, under your Royal Highness's supervision here, by our Superintendent of Gymnasia, Colonel Fox. As there will be many matters properly included in "organization" on which I cannot touch to-night, I shall content myself with this suggestion, that whatever tends to give to an army, by previous preparation, as near an approach to the effective unity and healthy coöperation which is represented by a sound and well-trained mind in a sound and trained human body, is a necessary part of it. I do not think that the expressions which are constantly used by everybody in commenting on the efficiency and success of the Prussian organization would be true unless that is what is meant by it. Now see whether we do not already know enough of the present war between China and Japan to confirm this lesson at least. I can hardly cite a better summary of the facts for my purpose than that picture of Mr. Tenniel's in *Punch*—which so admirably represented the broad fact which had startled and, despite the tremendous issues

involved and the horrible circumstances which have attended it, involuntarily amused us all—Jack the Giant Killer over the body of the blubbering giant.

For what has it been that has manifestly been the cause of the startling successes of Japan? No doubt you may put the thing in many ways, but I find that almost everybody instinctively summarizes the facts by saying, "What an extraordinary power of organization Japan has shown." A few of my friends have also pressed on me the inquiry—to which as yet we have no answer—"Who is the man?' They say that a development and employment of resources so thoroughly thought out, so consistent, so complete, so uniform, must imply that it is the work of some one man inspiring and setting to work all the rest. As we know nothing about the matter, and for practical purposes it is not very important to us, at all events just now, to guess who the man is, I may pass that by. I only mention it as one of the questions suggested by the situation to many acute observers. Whoever he is, we, at all events, have this consolation, that, if such an one there be, he is a man like Von Moltke; so loyal, so patriotic, that his identity is lost in his work, and that it is only among nations where crown and people are one that that breed is produced.

Apart, however, from the cause of this developed power, the conviction as to the fact that it has been produced, that the little Jack has shown in his defeat of the giant a capacity for war which we may all admire, and from which we may have something to learn, is so far as I have observed so general, almost so universal, that I doubt whether it is necessary to make any answer to the one or two writers who have suggested that the resistance which Japan has met with has been so insignificant that her successes do not show much proof of power. I think it will be sufficient to say that we at all events are sufficiently familiar with expeditions and campaigns as to which we do not doubt that, if only our men get a fair chance, the actual fighting need not give us much concern, but that nevertheless we sometimes succeed in not giving them a fair chance, with results very different from those which have attended the efforts of the arms of Japan. When we do gain a great success, those who see most of the work know best how much is due to the leaders who have planned and executed it. The lazy reader of warlike operations fancies that all war is simply a question of what I may perhaps best describe as battle fisticuffs. We here all know that war is a very different thing. We understand that when the Japanese succeeded in delivering at the right time and at the right places, within striking distance of the Chinese at Ping-Yang, three several armies which had started from three several ports, no two of which were within one hundred miles of each other, and all separated by great mountains and considerable rivers, they did a very remarkable thing. The nature of that achievement was not affected by the feebleness of the subsequent resistance. A very active enemy within Ping-Yang might no doubt have made the operation much more difficult than it in fact was. The Japanese had the best reason to know that the enemy within Ping-Yang could not be very active. The disorderly soldiery had so frightened off a population, disposed at first to be more friendly to the Chinese than to the Japanese cause, that the army

within Ping-Yang had the greatest difficulty in obtaining sufficient food to live, and were in no condition to move. Therefore if the three forces could be brought together simultaneously within striking distance of Ping-Yang, and could then coöperate, it was a wise and safe move. That it was a very difficult one is I think sufficiently apparent from this, that I may venture boldly to challenge any one to cite an instance throughout the whole past history of war where it has been successfully accomplished. I might hesitate to say that of my own knowledge, though I think that if such a thing had occurred I should know of it. The decision of the greatest of all students of war, of the man from whose indefatigable research no detail escaped, is decisive upon the point. "Such operations never come off" was, as I have elsewhere quoted it, the dictum of Napoleon. In presence of it we may afford to smile at the supreme knowledge of war of those who tell us from certain high quarters in the anonymous world that "we do not require to go to the battle of Ping-Yang to teach us the advantage of a flank attack." Certainly we do not. We do require to be "eyes" and not "no eyes" if we are to get any good from the study of any military operations whatever. We have had no such description as would enable us to judge how far the tactical working at Ping-Yang, or elsewhere, was carried out in detail in accordance with the deductions which the Germans have themselves drawn from their own experiences in 1870. That in the main, and so far as the circumstances demanded it, the Japanese began by intending to apply those deductions we may I think safely assume. We know that they have made a most careful study of them, and that they were taught by the best instructors they could get from Germany. How far the experiences of their own war have induced them to modify those deductions we do not know. Moreover, the lesson would not be presumably of great value if we did know what it was. For here the inferior fighting power, the inferior organization, the inferior skill, the inferior weapons of the Chinese would altogether confuse the conclusions we might draw. The Germans have had only to consider how, with equal or superior numbers, they should meet men supplied with the best weapons with which modern science can provide them. We have in our own wars had some sharp and some very encouraging lessons, that the methods that are forced on armies which have to contend against magazine-rifle and modern artillery, are not applicable, or necessary, for fighting against men armed with such weapons as many of the Chinese seem to have had. Therefore, interesting as it will be to obtain more detail, I do not think that we shall, when we get it, have very much to guide us, in these earlier battles at all events, as to the question with which we are now dealing so far as that is determined by mere victory. There may, however, be other points, even as regards the tactical conduct of an action, as to which we may pick up useful hints. We have had as to the general arrangement of the troops for battle, pretty complete accounts of two of the fights—that at Ping-Yang, and that at the passage of the Yalu. Both present similar characteristics. In the case of Ping-Yang, the form of the attack naturally followed the nature of the march. Apparently, the left and centre of the three columns had been brought into pretty close coöperation before the battle began. The column which formed the

right in the attack, came from Gensan on the East Coast, being undoubtedly connected with headquarters by a field telegraph. It carried out a pure outflanking movement directed from its original line of advance, and there can be no doubt that during the battle its coöperation with the remainder of the army was regulated by the same means—the field telegraph. Similarly at the fight at the passage of the Yalu the operation began by the detachment, on the day previous to the passage, of a brigade under Colonel Sato. After clearing out certain minor detachments, this force, unquestionably connected by wire with the main army, occupied ground immediately in rear of that portion of the Chinese army which was the object of attack. In the selection of their position on this occasion, the Chinese had made a good old-fashioned blunder. They had divided their army into two parts, separated by the considerable river the Ai, which here flows into the Yalu. The whole Japanese attacking force was therefore able to throw itself on a body, said to be about 7000 strong, on the east side of the Ai, without the remainder of the Chinese army being able to lend it the least assistance. When, subsequently, the victorious army crossed the Ai to move against that portion of the Chinese forces which had not been engaged, they found the place it had occupied abandoned before their arrival. So far as these general conditions of attack and defense are concerned there is nothing remarkable about the action. The same blunder would have led to the same result in almost any other period of war. There is nothing in it which assists in the solution of our main question. The case is very different with the point about the detachment of Colonel Sato. I need hardly remind you that, if not precisely from any of the actual circumstances of the 1870 campaign, yet from the whole of the condition of war disclosed by it, Sir Edward Hamley had in a very remarkable passage of his great book, anticipated as a not impossible or infrequent incident of battle, that an attacking general would precisely in this way send a detachment to the rear of the enemy he was about to assail, trusting for his safety in doing so to the field telegraph, and the temporary defensive or retaining power of a small force. You will remember also that his prediction received a remarkable confirmation during the 1877–78 campaign in Asia Minor, when Loris Melikoff defeated the previously victorious army of Moukhtar Pacha precisely by this means. If, therefore, this incident of the detachment of Colonel Sato shows nothing else, it shows how closely the Japanese have studied the latest phases of war. How much this detachment contributed towards rendering the victory decisive we do not know, but so far as it goes it certainly tends strongly to confirm one remarkable lesson drawn from the 1870 campaign, and to that extent to justify the general lines on which we drew conclusions from it.

So far as the very meagre reports which we have received of the later operations enable us to judge, I think we may gather that the characteristics of them have been very similar to those of these earlier ones. Separated bodies have been worked, both during long marches and for battle purposes, by means of the field telegraph, with a freedom which would have been impossible without it. Great inconvenience has been caused by the frequent cutting of the wire. In the case of the now most advanced, the extreme left

brigade of the 1st Army, a check sustained by the centre and right of that army separated this brigade at times by more than fifty miles from headquarters. The connection over so great a distance of a detached brigade in such a country by a mere field-wire is a bold and novel experiment, and it is not surprising that the link should have been severed, and that the brigade should for a time have been lost by the commander-in-chief. Nevertheless, the employment of this very detached force has so far justified itself, that it is this brigade which, having ultimately established its connection with the other brigade of the left division, has, with its help, done all the fighting in the neighborhood of Haitching, the two being then at least fifty miles in advance of any other forces of the 1st Army, but in full telegraphic connection with them. Moreover, on the actual battle-field the two brigades appear to have been, from considerable distances, brought together in an effective way, again, no doubt, by the field telegraph.

Now let us consider how far this affords us any answer to our main question. When we speak of "the lessons of the Franco-German War," it is obvious that different people may have derived different lessons from it, that the phenomena which it presented may have been, as we, in fact, know that they have been, differently read by different observers. To some it seemed that the one lesson of those campaigns was never to miss an opportunity for attacking; to others, that the breech-loader had conferred an enormous advantage on the defense. To some it seemed that the one great change was that from fighting in close order to fighting in dispersed order; others, especially of late years, since the actual remembrances of the battle-fields have become somewhat dimmed by time, have come to the conclusion that all that was a mistake, and that we cannot fight too closely shoulder to shoulder. To some it has seemed that the losses inflicted at a given spot, at a given moment, were so tremendous, that as these will certainly be increased by the magazine-rifle, Maxims, Gardiners, modern shrapnel, and the other developments of artillery, the only solution was that at which the Americans arrived at the end of their Civil War—the use of the spade and pickaxe. As there are those to whom this seems a very unheroic conclusion, let me say that it was supported by men in presence of whose judgment most of us would be shy of using such language. It is not only that Lee and Grant are names which make us speak in such a matter with bated breath, but that at least if any man in any army anywhere knew how to lead skilfully and gallantly in attack, that man was Skobeleff. After all his splendid efforts he was of the same mind as Grant and Lee. On the other hand, there are not a few of us, who, though we do not feel at liberty to treat the opposite opinion with quite the scorn that is sometimes used about it, do remember some Crimean experiences, and as I think, at least certain conclusions to be derived from the American war itself, and even from the latter part of the 1877–78 campaign in Europe after the Russians had taken to intrenching. We think that men who have been taught to fight very skilfully behind intrenchments will not fight very gallantly in front of them, and remembering that, as I have put it elsewhere, "under all conditions of arms, and in all periods of war, it has been on the moral force of armies that defeat or victory has mainly depended," we fear lest a war of mere intrenchments should

reduce armies to a condition in which there will be left little of that spirit which nails victory to standards, Some drew from the severity of the losses by day the conclusion that the army which first so practised night work as to gain precision and confidence in night marches and night attacks, would defeat every other. There are, yet further, some, not, I think, many, who altogether deride the losses inflicted by modern arms of precision, saying what is quite true, though for practical purposes not very relevant, that if you total up the losses inflicted in the course of a battle by the short cut-and-thrust sword of the Romans, or by the Brown Bess and smooth-bore gun of Peninsular days, the loss of life of any of those old battles was greater in proportion to numbers than the loss of life in the battles of 1870. It would be equally true to say that the loss of life which is incurred every day in the streets of big towns by people crossing them is, beyond all measure and compare, greater than the loss of life incurred in the same time by people jumping off precipices. The reason is that none of us are deterred from crossing the streets by any fear of being killed, and that when each accident occurs there is no escape from it, while none but suicides jump off precipices. So a certain severity of loss inflicted by our modern weapons produces the same effect on those who are responsible as was produced on the old German Dragoon in the Peninsula who would have ridden against any number of Frenchmen, when, finding that he was leading his regiment over the edge of a hopeless ravine, he pulled up, saying, "I vill not kill my young mensch." If it did not produce that effect on the leaders it would certainly in a short time produce it on the men, and if it did not produce it on the first set of men they would simply all be killed, and the lesson would reduce the total loss of life in the battle, because, seeing the precipice, neither would local commanders take the responsibility of "killing their young mensch," nor the "mensch" commit suicide. I have rather more elaborately discussed this notion than the rest, because, looking upon it as a feeble fallacy of just that plausible kind which affects those only who do not think out a question, I do not wish to allude to it again.

Each of the other different deductions, various and conflicting as they are, have, I think, much to be said in favor of them. For, as it seemed to me immediately after the war, and seems to me now, in regard to all these points, if we put that war of 1870 in its proper place, not as the one source of all information for the conduct of war, but as then the latest and still, on the whole, the most valuable for us, the real lesson in regard to them is, in its essence at least, a very old one, one that may be expressed under a very ancient form of words—this, namely. In military matters, as in others, there is a time for every purpose under heaven—a time to attack and a time to refrain from attacking, a time to intrench and a time to refrain from intrenching, a time to make a night attack and a time to refrain from making a night attack, a time to fight or move in close order, and a time to fight or move in dispersed order. The question of questions is to know when and how to do these things. How are we to learn it? In the first place who are "we" that have to learn it? That brings me back to what I spoke of as the first lesson, as I read it, of the "1870" campaigns, confirmed as I think it has been by each war since then. It can hardly be better ex-

pressed than it is on pages 110 and 111 of the "Infantry Drill Book." In saying that organization had acquired an altogether new importance, I meant, amongst many other things, first and chiefly this, that throughout the war decisions had to be formed on their own judgment by quite subordinate leaders to an extent which had never in any civilized army been the case before. During the early stages of the war the result was chaos, because neither the Prussian army nor any other had been prepared for the conditions under which they found themselves, and therefore the trained habit of coöperation, of working to a common end, and that end the one designed by the supreme leader, had not been so acquired as to be operative when prescribed words of command could no longer be issued or heard. There was no adequate bond to replace the rigid fetters of drill. Gradually during the war, thanks to the splendid peace training of at least the Prussian army, the unity that was needful was secured. The head had resumed its proper position in the organism, because the limbs and sinews moved in accordance with its inspiration. But the essential change was one in the moral character of discipline. The realization may not have been as perfect as it seemed to us at the time and from a distance to have been. The criticism on the details of which we have had so much of late years in the frank statements of German officers may all be true or may, as we have also heard, be gross exaggerations from particular incidents. It would indeed have been extraordinary if an army, finding itself as this did, under circumstances which had not been anticipated in its previous training, could have worked out without hitch a perfect method. But at all events, as a lesson from the war, all were agreed that the essential condition of success was a unity of action due to previous training, a trained knowledge how to tackle difficulties, and a trained capacity to coöperate for an assigned end without many orders. No limit could be placed defining a rank that would be exempt from this necessity. Immediately after the war, writing as a subaltern, I ventured to say: "The habit of command must cease to be the habit of exact prescription and become the habit of clear instruction. All training must tend to develop the qualities which are essential for such a mode of action. Officers of all ranks must be continually having to carry out orders for the execution of which they will have to trust to their own judgment; otherwise they will be apt to think, when they find themselves without express prescription, that they have only to follow their own sweet wills." Nearly a quarter of a century later I still think that that is the most essential part of the whole matter, because however important other elements of effective organization may be, the nature of the vital force which animates the whole is and must be the most important of all. No changes that have taken place seem to me in the smallest degree to have modified that necessity. All of them have tended to make it more important. Here let me once more refer to our modern gymnastic instruction, which I have already mentioned as a summary in regard to the man of the ideal we want for the army. It is on its own merits, however, a most essential part of the building up of a modern army. For it follows that if the great change be one in the moral character of discipline, the discipline we want must be instilled into the recruit from the moment he joins. That that is just what is being done in

the best possible way in the gymnasia here I, at all events, feel no doubt. It is impossible for me for lack of time to enlarge on the subject, but I cannot say how important I think it. To return, however, to the general principle, as I quoted it from my own words used just after the Franco-German War. We have gone a long way in that direction since those days. I am quite sure that we have not gone too far. I sometimes fear that the hankering after something that will avoid the necessity of exercising judgment which was engendered by old conditions and the old formal drill, even now in the teeth of the explicit directions of the drill book, affects us injuriously. The wish to have a fixed attack formation is strong, and I have known not unfrequently officers in command of small mixed forces think that, no matter what the circumstances, they escaped all necessity for considering them by directing, as the one panacea for all ills, their infantry commander to form for attack.

That expression has become very nearly a happy substitute for the dear old "Go on, Sergeant-Major," as an escape from all responsibility and all thought. Perhaps I shall best arouse the attention of some young officers, if there be any here who do not realize it, to the importance of not failing to study seriously for themselves the question, at least, when to order men to move in attack formation, and when not, by citing a melancholy experience of my own. I was once on a board which had forced on it the unpleasant duty of recommending an officer not to be promoted to the command of a battalion, on the very first day on which we saw him in the field. The board was quite unanimous on the point, and two very excellent lieutenant-colonels who were acting as umpires very regretfully took the same view; felt indeed that it would have been impossible to come to any other conclusion. Now the initial blunder which led to all the others which were made on that occasion was that the battalion which formed the infantry part of the small force had been ordered to form for attack under circumstances which made that operation not only a complete misconception of the orders that had been issued, utterly inapplicable and tending to interfere with their execution, but, combined with certain other errors that followed, positively dangerous and disastrous. Lest I should be misunderstood, I will add that it was no question of any difference of judgment as to the strength of some position to be attacked, but of an order given under wholly irrelevant circumstances. Therefore, I would implore all those who are even looking to their own career alone, not to imagine that they can shelter themselves behind any convenient formulæ, but to realize that they must cultivate their own judgment and to consider how best that is to be done. For in its degree, exactly in proportion as our tests come to be sound tests, securing for us what we want for the new phase of war, it will be this test of soundness of judgment which will fall upon ranks far below those which are affected by the examinations for promotion to the command of regiments.

What obstacles, however, stand in the way of any of us acquiring what is thus wanted? How far do our circumstances enable us to apply those lessons of the 1870 campaign which we most feel still to be applicable? For among those very lessons I may take it safely that one was and is that an

abstract knowledge of them all would be wholly useless to us without the means of taking advantage of them during peace time. For surely that is the reduplicated lesson of 1870 in the fields of France and of 1894 in Manchuria. We have in both cases the most marvellous exhibition of power due not to long war experience but to a certain advantage acquired purely by what had been done in peace. In order to deal with the question which I have asked, "What obstacles stand in the way of our acquiring what is wanted?" I must ask you for a short time to travel with me to past times and distant countries and then to come very close home. First I want to insist on the fact that this peace creation of an army for war is, to a great extent at least, peculiar to our time. All of you are familiar with the fact that the great wars of the end of the last and the beginning of the present century were ushered in by an invasion of France. What were the conditions of that invasion? In France there was no organized army worthy of the name. It had gone to pieces with the Revolution. On the side of the invaders there were first the army which Frederick the Great had created. Only thirty years had passed since the end of his great war. It was the most renowned, perfectly equipped, and organized army of the day. Secondly, there was the quite recently war-tried army of Austria fresh from the experiences of war with Turkey. The invasion utterly collapsed in presence of the levies of Revolutionary conscripts organized by Dumouriez. There is a good deal of poetic license about Coleridge's statement that the arm of Revolutionary France "made mockery of the warrior's tramp," but as summing up the facts of the collision here between developed and undeveloped strength it represents the facts sufficiently closely for my purpose.

By 1813 Wellington had created in the Peninsula a splendidly organized and equipped army—"an army that could go anywhere and do anything"—but it was an army that had been formed almost entirely by long years of war. Its excellence depended on training in the best of all schools—a war in which for five years its organization had never been broken up and had been gradually perfected.

The army, by help of which Prussia developed into Germany, overthrew Austria, and conquered France, was essentially a peace creation. It really owed its regeneration, if not its birth, to the failure of the old army in 1849 and in 1859. In a certain sense there were traditions in Prussia which favored the idea of an army created in peace time for war. For the germ and nucleus at least of the Army of Liberation, of the army which fought at Waterloo, had been brought into existence during peace time. The army of the past, moreover, may be said to have been rather in a condition of uspended animation than dead, at the time when that peace development was to begin which was to make it the most powerful of all existing armies, though opposed to two both repeatedly tried in war, while for fifty years it had only had the experience of little wars with Denmark, in which only a small fraction had been employed. Profiting by that experience Japan has during peace time created a warlike instrument, the perfection of which is not to be judged only by its success in the field but by the unmistakable evidence that we get from all observers of its splendid working and completeness in all its parts.

Now I must ask you, having considered these cases, to look back a little into our own history. I do not know whether many in this room have had the opportunity of talking freely with officers who joined or were serving in the English army in the forties, and realize what the condition of things was at that time. If not, let me try briefly to describe it to you as I have heard it from them.

That glorious army made in war, "which could go anywhere and do anything," was not in a state of suspended animation. It was stone dead. Fortunate indeed was it that among the proud mottoes of our regiments, one at least should boast as an omen of happy augury for the future, that mindful of their ancient warlike worth, even their exuviæ had in them the spirit to triumph. For of any vestige of an army that could go anywhere and do anything, nothing but exuviæ and ashes remained. Nay more, even the ashes had been scattered over the country. We were evidently taking as our motto for the army "Our exuviæ triumph." We could not take as our motto "E'en in our ashes live the wonted fires," for to keep warm, ashes must be in a large heap, and ours were divided into handfuls, given as a spoil to be raked over by the local tradesman and local mayor. How does that condition of the army fifty years ago affect us now? What has it to do with the question I have propounded? Much every way. My difficulty lies in following the innumerable threads of connection between that time and this, and twisting them into a cord for the purpose for which I need them. First let me say that it was from no want of vitality in the grand old Peninsular army that it had died. Nor was it even from any lack of a tradition in its ranks, favorable to the keeping up of life during peace time, or even in a measure to the creation, or re-creation, of such life by peace exercises. I guarded myself by saying that it was almost entirely a war-created army. In fact, though the peace of Amiens was so brief as to be little better than a truce, it had been long enough to enable Moore, at Shorncliffe, to show what could be done by peace work to perfect an army for war. The one portion of our army which, if any had, had retained within it some sparks of life, even in the forties, were the disjointed limbs of that Light Infantry Division which had been trained in peace time by Moore, at Shorncliffe, and had been boldly ridden with hard hands and sharp spurs, not without fierce neighing under such treatment, by Crawford in the Peninsula. No, it was from no sickness, from no attacks of internal disorder or malady, that that army had died. It had been done to death by England. That is the first and the most vital point which I want you to consider.

I should suppose that there are not many here who are likely to have come across the first number of a new magazine which has recently been sent to me. It is by no means especially addressed to a military audience. Its title, *The Minster*, will suggest to you that it is not. Indeed, if I may judge from one of the articles which deals with the relation of the civil engineer to military work, the writers assume that their audience is inspired with a sentiment in regard to soldiers very characteristic of a certain phase of English life. They want to excuse anything that is good for the trade in improved weapons by saying that if only they can manage to frighten

those wicked soldiers by insuring their being killed, why, they will get peace. A most Christian sentiment surely! It is much as if whilst training cocks to fight, I salved my conscience by reflecting that if I could only frighten the cocks by making the spurs deadly, I should stop cock-fighting. That, as you will see, has a pretty close bearing on my subject, for it comes into happy contrast with the article which I venture to ask you to read, and for the sake of which I refer you to *The Minster*. It is written by the man who, if any Englishman does, knows Japan—Sir Edwin Arnold. He tells us very clearly the causes of Japanese success. I cannot so epitomize what he says as to bring out all that I should like to do, but the essential thought may be conveyed in the following short extracts:—

13. He tells how the "Japanese—earnest, exact, and artistic in all things—have carried into the organization of their army and their navy that same conscientious craftsmanship and minute fidelity as to details which you see all over the land; wherever a carpenter fits a plank, or an artist carves an ivory netshuke, or a Japanese lady ties up a present for her friend.

"In Japan, unlike China, it is held noble to be a soldier. In consequence the Japanese regiments are not only well recruited, but splendidly led by officers educated in warlike science.

"The system under which China has stagnated was secretly fatal to patriotism, loyalty, faith, manhood, public spirit, and private self-respect. In Japan, on the contrary, those virtues, rooted anciently in her soil, have never ceased to blossom, and produce the fruit that comes from a real, serious, and sensible national unity.

"In fact, the whole land from the Emperor to the lowest ninosku, or 'leg-man,' has been consolidated by one great heart-beat of national effort, and the consequence is that the vast, unwieldy, inarticulate mass of Chinese strength has gone down before the flag of Japan, like rice before the harvest knife."

Now, certainly, during the second year of the Crimean War, and during the Indian Mutinies, it was as true of England, as it is now true of Japan, that "the whole land, from Her Majesty to the lowest crofter, was consolidated by one great heart-beat of national effort," though not, alas, as has been the case in Japan, to the exclusion of party strife. Unhappily, our dear England lives in a condition of halting between two opinions. I fully believe that if we were engaged in a great war there would be many a village in Britain that would be ready for such sacrifices, as Sir Edwin tells us are now everywhere made in Japan, in order that the whole national wealth and strength may be thrown into the struggle. But the cold fit succeeds to the hot fit, and then the consciousness that national life implies the fulfilment of national duties, and that the time will come when national duties cannot be fulfilled, unless the right arm and the left arm of England are both kept in the meantime in a condition of readiness to act, is lost. Then all attempts of soldiers to do their duty, or to learn their duty, such as it would be looked upon as shameful in England for any other men to neglect in learning theirs, are confused with "Militarism" and denounced accordingly. The doctor who goes to watch men and women writhing under the most hideous agonies to which the human frame is liable, is not looked upon as

a cruel monster, but as one who is honorably preparing himself for stern duties that will relieve human suffering hereafter. The lawyer who watches a skillful pleader winding the rope around the neck of a miserable murderer, is not accused of enjoying the spectacle of mental torture, but as doing the wisest thing he can to train himself for future duties. But the one service which is national, or nothing, receives in its preparation for duty no national sympathy. As to the present aspect of that matter I shall have something to say hereafter. For the moment I return to the point that in the thirty years which followed Waterloo, England, in one of her cold fits, had strangled the army which Wellington had created, while he, anxious to save such *débris* as he could, had allowed them to be so scattered throughout the land, and so hidden from view, that all life had gone out of them.

I have spoken of battalions, but the destruction which fell upon the infantry was nothing in its completeness to that which smote my own regiment. Old men, scarcely able to mount a horse, commanded the things called troops or companies. But I must not enlarge upon the pathetic picture. Some here may have seen a contemporary sketch of the Woolwich parade ground of those days. Under such circumstances, what interest in their profession could any of the best men take? Some threw themselves eagerly into scientific pursuits, and became great authorities about magnetic observations, geodetic surveys, and the like. But for the most part, those who had gradually risen by length of tooth to the top, were, as Sir Edwin Hamley once said of them in my hearing, "ignorant, and proud of their own ignorance." Certainly, here and there, one who was known as "an old Waterloo man," survived, and was accordingly in his village supposed to be a Wellington. The country generally, the army perhaps even more completely than the country, failed to realize in regard to that scratch pack that was gathered at Waterloo, the point of the Duke's sayings that every one that fought there was not a hero, that it was the worst army he ever commanded, and that he had had a villainous staff. Any of the idle and ignorant subalterns whose arrival inspired him with disgust, as substitutes for his splendid officers of the Peninsula, was an oracle to the end of his life, because with natural British pluck he had gone through that glorious day. Let me cite you a specimen, with his own account of the vast warlike experience on which his reputation rested, given by him as it used to be, when, high in place, high in authority, as one of the survivals of a long peace, he laid down the military law. I will change his name, though it may be familiar to some here. "When I was (*i. e.*, as a last joined subaltern) at the battle of Waterloo, Sir Alexander Dickson rode up to me. Says he to me, 'Mr. Smith, do you know what you are firing at?' and I to him, 'I do not, Sir Alexander Dickson,' and he to me, 'Mr. Smith, do you know that you are wasting your ammunition?' and I to him, 'I do, Sir Alexander Dickson.' With that, Sir Alexander Dickson rode away, and we won the battle of Waterloo. Any change of the most trifling description is to be deprecated."

More wonderful still, as indicating the extent to which such forces continue operative in an army long after those who have exercised them have gone to their graves, I used to hear that story told soon after I joined the

army by men who, though much senior to me, were in the full vigor of youth. I, in my innocence, always heard it, and have often quoted it as the *reductio ad absurdum* of that kind of talk. To my amazement, I ascertained not long ago that one of those who most frequently recorded it for the benefit of us youngsters in those days, had always believed the deduction to be a perfectly sound one, and wished us to realize the iniquity of any attempts, such as had been made even then, to restore life to the army.

Now, the thing I want to insist upon is, that between us and the great time of the Peninsular Army there intervenes a long period of death, during which all sorts of ideas and traditions took root which had no connection with that glorious period at all, but arose solely from the imaginings of men who, by no fault of their own, but by the willful act of the people of this country, had spent their lives in a way that was not only no preparation for war, but tending to make them hostile to all attempts on the part of others to prepare themselves for it. Some few of them, indeed, had even been through some part of the Peninsular campaigns in the lower ranks. Now, as Frederick the Great put it, a mule or an ass may go through many campaigns and be none the wiser at the end of them. Not a few of the mules and asses of the Peninsula had become great authorities among their *entourage*. If the army had been in any way gathered together it would not much have mattered. The mules and the asses would have received the kicks to which they had been well accustomed in the war. But the few men of knowledge who still lived, and, as far as circumstances permitted, worked in the army, could produce no effect beyond their own regiments. They were isolated in distant stations. Moreover, wisely, I think, from their point of view, one of the most fixed and established traditions that had been set up by those who deprecated change from that condition of death, was the military and moral degradation of reading anything. I have been told that this tradition came down so closely into our own time that some of my own contemporaries remember when it was considered disgraceful for a subaltern so much as to glance at a drill-book. A military bookseller, who, naturally, perhaps, looked at that question from a different point of view, recently told me that some years ago a venerable officer who, not in war, but in peace time, had done some valuable work for the army, completely lost his temper with him and stormed at the iniquity of the idea of its being of any advantage to an officer as a warlike preparation to read anything. "Did Wellington's officers read?" he asked.

Well, sir, before I answer, as I propose to do, that question, I want, as time presses, to consider how, when we were in that slough of despond when the forties had opened out into the fifties, and war was manifestly in sight, we began to struggle out of the mud. Nothing could save us from those disastrous consequences of our then condition, which Sir Evelyn Wood has been recently so graphically photographing for us. One man at least thought he saw clearly the direction in which we had to move in order that we should be able to fight at all as an army, and not as a mere congress of braves. He did much else; but two or three notable things that he did concern me at this moment. By his influence the army was provided with the very best and newest form of weapons. He formed the

camp of Chobham, and he founded this library. Was he right that those things represented, at least in principle, the essential conditions of reform? Has his judgment been confirmed by the lessons of 1870 and the lessons of 1894? or were those men right who taught the army in its then condition that "any change was to be deprecated," and that any knowledge of the experiences of war in the past must be destructive of the warlike quality of an army for fighting in the future? Sir, to state those questions is to answer them. The experiences of 1870 and of 1894 have absolutely confirmed his judgment. It has been by eagerly watching for and adopting the very latest improvements of all kinds, it has been by sifting, testing, and trying the innumerable productions of the fertile inventive genius of our time for themselves, and on their own judgment, by being the first to adopt and apply whatever is worthy of adoption, that alike, Germany and Japan have taken one great step in peace time which has led to their perfection in war. It has been by bringing their armies, not specimens of their armies, together on ground where it was possible for all arms to be trained in large bodies, and for all to become accustomed to the combined working of all arms, that they have alike attained the second great step in their organic efficiency. Lastly, it has been by reversing the idea that the more ignorant a soldier was of the past the better he would be in the future, it has been by cultivating knowledge and judgment in all ranks, that beyond all dispute they have attained the third most important step.

Alas, with us the national cold fit succeeded to the hot fit. The rifle, the camp, and the library were accepted, not as what they were, the representative facts of much greater ideas, but as final, or almost final, in themselves. We did not judge for ourselves in any but the rarest instances as to any improvement that was required. We, avowedly at least, adopted the principle of stifling invention, of waiting till we could follow in the trail of others. We left the great mass of the army in that condition of scattered fragments which had been the most disastrous feature of the exuviæ period. Contenting ourselves with specimens at Aldershot and the Curragh, the great number of stations were left to consist of isolated battalions, if even battalions were together, isolated, at best even now, double batteries and isolated cavalry regiments, often themselves scattered, all without ground on which it was possible for any of them to acquire training in the essentials of modern warfare. These are things which show how indispensable to the carrying out of the lessons of 1870, where most up to date, it is that we should have behind us that "great national heart-beat" of which Sir Edwin speaks. No one knows better than your Royal Highness, and there is no one in this room who does not know, how tremendous a strain it has been upon Aldershot, even to test the knowledge in command of mixed bodies of troops of officers for promotion. Why is that? What does it imply? What is further implied is the almost impossibility of giving even here the practice which it is only fair that they should have in the work in which they are to be examined. Surely this at least, that if they have, as they sorely complain, and, as we all know is the case, nowhere else unless it be at the Curragh, the opportunity of obtaining that practice, it is because, except those specimens of the army which are gathered here

and at the Curragh, no part of the army is in sufficiently large bodies or has adequate ground on which to practise the lessons of 1870 or any others. The local tradesman and the local mayor have retained their hold upon the fragments which have taken the place of the ashes of the forties. Every attempt to carry out the principle which underlay the formation of the camp at Chobham, by either withdrawing troops from small stations where they have no chance, or even purchasing ground that will make at least the practice of small bodies somewhat better than it is, is resisted by local greed. Parliamentary pressure is brought to bear to resist the one; the hope of fleecing the government sends up the price at once to resist the other. As long as that is so the most important lessons of 1870 are not applicable to us, confirmed though they have been, as more than ever necessary if we could apply them to-day. I am sure that these crimes against patriotism are only committed in ignorance, but I do not know how that ignorance is to be cured. Who but soldiers understand to the full the injury these things do to us? No soldier can reach those who do them, unless, perhaps, an appeal from your Royal Highness, who has other claims than those of a soldier, to awake that national sentiment, which must to some extent have been startled by seeing an Eastern nation so manifestly surpass us in sustained patriotic feeling, might go home. At any rate I am sure of this, that there never was a time when officers of the army were more keenly anxious to learn all they can to fit them for undertaking those tremendous responsibilities of which the present condition of war throws at least a share upon every man in every rank, if only the country will give them a chance of doing so. But in that matter the lesson of 1870, as of that of 1894, is that which Sir Edwin Arnold has so well brought out. You will notice that in every sentence it is not of the "Japanese Army" that he speaks, but of "the Japanese." It is a national question whether "patriotism, loyalty, faith, manhood, and public spirit" are still virtues to be cultivated, or whether what brings into contempt their exercise is the thing that will best draw sympathetic laughter from the readers of Christmas numbers and applause from crowds of electors. As long as lord mayors feast us one day because the country has obtained by our means what it at the moment had a passing whim for, and the next, compliment their new guests on the fact that their honors have not been due to "blood-guiltiness," there is a halting between two opinions which for our efficiency spells ruin. Certainly Gordon did well to turn his scornful back upon that sort of business. Either the army is a thing of which the country is proud, not because it looks so pretty at reviews, but because it is a stern school of preparation for the most solemn duties that can be laid on man or nation, duties not to be undertaken lightly or on slight cause, but which a nation, when the occasion arises, will neglect at its peril, or it must dwindle and perish, as ours did in the forties. The lesson of 1870 is confirmed by that of 1894, that in that case, at least for the time, and till purgatorial fires have renewed its youth, the nation will, under present conditions, sooner or later go down with it, as it will certainly deserve to go down.

I have touched on what I understand to have been the ideas of the great founder of this Library, in regard to the adoption of the rifle, and the

camp, antecedent as they were to 1870, and I have endeavored to show that they have been confirmed by the lessons of that year and of the time since then. I have said nothing of the Library itself, and I have yet to answer the scornful question "Did Wellington's officers read?" I have reserved both these till now, because I want to bring them in *apropos* to an apology for the way in which I have tackled my bone. There are a great many lessons of the 1870 campaign to which I have not even alluded. Time would hardly have permitted me to do so, if I was adequately to deal with those which seemed to me to be the most important points. But it would not have been possible for me if I had had ever so much time to summarize into convenient formulæ the lessons in regard to the strategic movement of armies, the tactical conduct of troops, and the various other matters which are, I think, certainly to be learnt from a study of that war, and then to consider how these would be modified by the changes which have taken place since 1870. From what I said about there being a time for every purpose under heaven, you will, I think, infer what I mean. My view is, that we gain enormously by studying the experiences of other men in war, if we take into account all the circumstances under which they acted, and consider how far the circumstances under which we are, or are likely to be placed, would modify those experiences. I do not think you gain much by having in your mind short abstract statements of what ought, or ought not, to be done on certain occasions. As a matter of fact I have never known a man tell me "the text-books say so and so," without finding that he had applied his precept to some case to which it was manifestly inapplicable. Take even such a dictum as the one I have quoted from Napoleon, "such operations never come off." Was Napoleon wrong? Certainly not! He was absolutely right! Only, when he wrote, that wonderful little connecting wire which eliminates distance, and enables brains hundreds or thousands of miles apart to be in direct communication with one another had not been invented. Now this, my view of the nature of the study which is most useful and profitable for us is confirmed, at least so far as the cultivation of tactical judgment is concerned, by a book in this library which is, I venture to think, one of the most noteworthy which has ever been produced on any art, by a master of that art. The greatest master of the art of war in our time has, in "Von Moltke's Tactical Problems," with a patience, a clearness, and a simplicity unrivalled, given us his teaching of the lessons of our time. It consists not of abstract statements, but of concrete examples. Some of them do no doubt, as is pointed out by the staff which edits the volume, require modification under present circumstances. That will always be the case in war. No one can so anticipate all the circumstances with which a man will have to deal, as to save him the trouble of taking them all into account in arriving at his decision. The very latest improvements we have, whether cycles, the skates which Colonel Fox has been describing for us—if, as I fully believe they will be, they are so perfected as to enable us to employ them freely—modern shrapnel, high explosives, machine guns, magazine rifles, must be reckoned with; but unless all the circumstances are taken into account, any abstract statement, "this ought to be done; this ought not to be done," seems to me at least to be

only misleading. That volume is unique. It is to my mind inconceivable how any soldier can imagine that such teaching is "unpractical," and that some study of mathematics to replace it deserves to be considered for a soldier practical whilst this is theoretical. That that opinion is held by some soldiers for whom I have a very great respect, I am wicked enough to believe to be one of the accursed legacies of the forties, when, as I have said, some of our ablest men in sheer disgust betook themselves to Quaternions, and the like, as more practical than any soldiering they saw, or any study of war that was put before them. They have left pupils behind them who, if they had been brought up in a different school, would be the last men to hold such opinions, and would have come to appreciate Von Moltke too highly to dare in such a matter to put their judgment against his. And now for the answer to the question about Wellington's soldiers. If you will consider the matter for a moment you will see that in the mouth of the questioner it is at once so comic, and so thoroughly characteristic of the school to which he belonged, that the circumstances of the question are in themselves worth noting. In reality, it is a positive dogmatic assertion of the negative, based on what? Means of knowledge he has none, for the only means by which he could know whether Wellington himself, whether the fighting Picton, whether Graham, Lord Lyndoch, whether Crawford, Benjamin Shaw, Kennedy, whether to go among the captains and subalterns, Charles, William, and George Napier, or to go higher again, their beloved master, Moore, were students of war, he must read himself in order to know. To suggest such a thing to him would have been almost worse than asking him to commit murder. Therefore he prefers dogmatically to assert an absolute falsehood. There was not one of the men of that time who showed their practical knowledge of war sufficiently for their lives to have been recorded for us as examples, of whom it is not true that they devoted themselves to the study of their profession as an art. They were all especially great students of Napoleon, and they were familiar with his precept, "Read and re-read." But here I am anxious to make a distinction between their time and ours. Captains and subalterns like the Napiers, who meant going ahead, and in their eagerness in actual fighting never did more than just get through alive, and nearly always managed to get themselves severely wounded, read to a man, but during such a war where knowledge of the art was so thorough in the higher ranks, that in the very course of the campaigns the best instruction could be given, it is very possible that there were those who did not read among some of the lower ranks, who yet in that eminently practical school learnt much. I do not know of them. Moreover, hardly for any in the Light Division, but for many elsewhere, the carrying out of subordinate duty in those days did not involve much exercise of judgment. Therefore, it was natural that Sir Charles in urging his younger brother to read, should put it before him as holding out the promise of distinction. I am very certain that in our day he would not have put it in that way. He would have said, "Now that the fulfilment of your ordinary duty in war may at any time call upon you to exercise your own judgment, you cannot fulfill that duty without knowing much of what has happened in the past, in order to judge what is likely to happen in the future."

There is a certain very natural modesty in men who have never seen a shot fired in anger which makes them afraid to believe that they can in any way compensate that loss of experience by studying the experiences of others. Certainly, it is true that no account of what happens in war can altogether convey to one who has never seen anything of what it feels like. Nevertheless, it is precisely those who have seen most of war who have urged the study of its experiences as a practical preparation on those who have not. Therefore, Sir, as the campaign of 1866, that of 1870, and above all, that of 1894 have shown us how much in this third matter may be done in peace to prepare for war, I think that the foundation of this Library, also anticipating, like the others, those lessons of 1870, which have been most confirmed by more recent experiences, was one of the most practical and valuable steps that he, to whom in so many other ways we owe so much, could have taken to redeem our army from the slough into which it had fallen, to restore to it connection with its glorious past, and to prepare for it as glorious a future. That, like all the more important lessons of the Franco-German War, on which I have touched, is not "out of date," but is one of the best checks we have to prevent our mistaking the forms which will pass away for the essential spirit of the lessons which have a vitality that will at least outlive us.

SUBSISTENCE OF TROOPS IN THE FIELD.

By Lieut-Colonel T. C. SCOBLE, Retired List.

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IN an essay on "Imperial Defense," by Charles Dilke and Spencer Wilkinson (1892), the following statement is made:—

"The army corps is a complete subdivision of an army, and is managed entirely by the general who commands it, taking his instructions as to the purpose and nature of his movements from the commander-in-chief. It consists of a number of bodies each having its own chief, so that the army corps general deals only with these chiefs. These bodies are two or three infantry divisions, and the groups belonging to the army corps, of artillery, engineers, transport, commissariat, medical service, police, and post-office. Each of these bodies has a special function requiring knowledge and practice for its performance. None of them can be improvised."

"If, therefore, an army corps when wanted for war is without any one of its necessary elements, though the rest are perfect, the corps cannot be used. If, for example, either infantry, artillery or medical service were imperfect, the fighting power of the army corps would be impaired. If transport or commissariat were wanting, insufficient or unskilled, its fighting power would be absolutely destroyed, for the whole force would be helpless unless men and horses were regularly fed and the troops supplied with ammunition. The commissariat collects the food; the transport conveys it and all other requisites to the troops. Without these services the troops cannot

* By permission.

enter on a campaign. Transport and commissariat duties are as difficult as those of infantry, cavalry, or artillery, and equally require special training. These branches, like the others, must be trained and organized in peace. Officers and non-commissioned officers must be there, with a nucleus of men and horses to be completed to war strength on mobilization by the recall from the reserve of men previously trained, and by the acquisition of horses previously assigned for the purpose."

"The lines of communication in home defense would be the railways between the army and the great stores and centres of industry. The officers to be in charge of them during war ought to be appointed in peace, and provided with the necessary officers and men. The arrangements for producing or providing the necessaries of war must also be prepared during peace."

Such are the ideas which have impelled me to compile this paper, embodying as concisely as possible the system of food supply in modern armies. For the necessity of some organization in the Canadian Militia we have only to recall the experience of 1885, when the supplies were furnished on the alternating principle; *i.e.* alternately a feast or a famine. The lack of proper method; the shameless robbery practised by some whose duty it was to protect the public; and untrained and inefficient supply officers, cost the country dearly. The campaign may have been necessary; it may have been successful; there are diverse opinions upon these subjects; but there can be no divergence of opinion as to the absolute necessity for a better organized system of supply, should the Canadian Militia be again called upon for service in the field.

Naturally, my first example is taken from the system at present laid down by regulation for the British service. Some of the regulations are not adapted to our country and the probable conditions under which our militia must enter the field, owing to our distance from our base of supply and the absolute lack of material of war in the country. But the general rules laid down can be adapted to our circumstances, and what cannot be improvised must be done without.

THE IMPERIAL SERVICE.

The general rules governing the British transport service are embodied in the following extract from "Regulations for the Supply of an Army in the Field, etc.," issued with Army orders, dated 1st November, 1890:

"Sec. I., 3.—The supply of an army in the field will be under a general officer or a colonel on the staff, according to the magnitude of the operations to be undertaken. His official title will be General (or colonel) of Communications, and he will also have the command of the lines of communication."

"Sec. I., 9.—The troops required for the protection of the lines of communication and for duty at the base, advanced depot, or intermediate posts, will form a distinct organization, and will be under his command."

"Sec. II., 11.--The duties of the General of Communications are as follows: (*a*) He will keep the army in the field and on the lines of communication at all times, and under all circumstances, supplied with food,

munitions of war, remounts, transport animals, and every sort of store it may require.

"Sec. II., 12.—His authority is paramount over all troops and over all officers, halted or moving, along the lines of communication. He will issue such instructions as he may deem advisable, for preventing persons not belonging to the army moving about on the lines of communication.

"Sec. II., 16.—An officer, who should possess ability, great experience and a thorough knowledge of his profession, will be appointed to be commandant of the base.

"Sec. II., 22.—As an army advances, each successive halting place which is established as a staging station on the lines of communication, must have means for accommodating the men and animals passing through. Some of these stations will be of greater importance than others; but all will require to have an officer in charge, who will be termed a station commandant.

"Sec. II., 28.—Each commandant at his own station represents the General of Communications, and the orders and instructions he issues are to be regarded as emanating from that officer.

"Sec. III., 52.—The supply duties of an army will be placed under a staff officer, on the staff of the General of Communications.

"Sec. III., 61.—Rations will be supplied upon the demand of authorized officers, who will be responsible for the numbers demanded and that they are only for those entitled thereto; or they may be ordered to be provided by local authorities when troops are billeted.

"Sec. III., 71.—The supply officers, will, upon demand of the medical department, furnish all hospital supplies, including medical comforts.

"Sec. IV., 72.—All the transport of the army will be placed under a staff officer, styled the 'Director of Transport,' who will be an officer on the staff of the General of Communications.

"When necessary, the railway service will be placed under an officer to be styled the 'Director of Railways,' and all that strictly appertains to keeping the lines in good order—extensions, necessary repairs, personnel, etc.—will be under his charge."

The following memorandum "on the establishment of an assumed line of communication for an army," is abbreviated from Section 4, Army Orders, dated 1st December, 1892:

I.—The details given are on the assumption that the campaign will be in a temperate climate, that the army in the field consists of one army corps and one cavalry division. and that the line will be 100 miles long, viz.: 50 of railway and 50 of road.

Stations for such a line would probably be provided as follows:—

A base (probably on the sea-board).

One special station.

Two first-class stations, (where it is decided to collect stores, or where there are large hospitals, veterinary establishments, a field arsenal, the terminus of a railway, or a break of gauge).

Three second-class stations, (where animals for transport are kept, where troops entrain or detrain, or where there are general stores.)

One advance depot (whence all requisitions from the front are filled, and regimental and departmental supply wagons are refilled).

II. Whatever the length or description of line, supplies will be arranged for as follows:

(*a*) A certain quantity of ordnance stores and commissariat supplies are carried with the mobile army in regimental and departmental transport.

(*b*) Requisitions for commissariat supplies are made in the country where the campaign takes place.

(*c*) Supplies collected at the base are passed daily along the the line of communication, and distributed to the army from the advanced depot, or from moveable magazines (where the advanced depot is connected by a serviceable line of railway with the base) which work between the advanced depot and the field army. In any case the advanced depot must be moved forward as the troops advance, in order to be as near the field army as possible.

III. The Medical Department arranges for stationary hospitals where most convenient on the line of communications, and for one or more general hospitals at the base of operations.

IV. The Ordnance Store Department has its principal store at the base, and a secondary one at the advanced depot. When opportunity occurs, regiments draw ordnance stores and clothing from the advanced depot. But these are drawn only to supply deficiencies, not to increase stocks.

The probable number of troops employed on such a line of communications, would be as follows:

Staff at headquarters, base, stations, and advance depot	598	all ranks
Staff at sick horse depot, remount depot, etc	3808	" "
1 Regiment of Cavalry	618	" "
2 Batteries Field Artillery	352	" "
1 Fortress Company Royal Engineers	132	" "
2 Railway Companies Royal Engineers	316	" "
4 Battalions Infantry	4000	" "
4 Machine gun sections	52	" "
6 Companies Army Service Corps	1332	" "
2 General Hospital (400 beds each)	300	" "
2 Stationary Hospitals	170	" "
Ordnance Store Department	281	" "
Civilian laborers and transport	3320	" "
Total	15,279	
	5280	horses
	1720	carriages

The weight of supplies and stores to be sent up daily for the requirements of an army corps is estimated at 300 tons (of 2240 lbs.) supposing that meat, forage, and wood were carried. If cattle, hay and wood were obtained in the country, this weight will be proportionately lessened. On the basis of 300 tons daily, the distance being 50 miles for wheeled trans-

port, it is estimated that 1320 wagons, carrying 2 tons per load, drawn by 5280 horses, driven by 1320 drivers, will be required.

The civilian laborers, etc., are established in a depot on the line of communications, under a staff of 4 officers, 19 non-commissioned officers and men, including 2 interpreters.

There are 5 field ovens respectively at base, base hospital, advance depot, and at each of the stations on the line of communications. There are also at the base, 27 field ovens, in store. They are made of sheet iron; weigh from 320 to 342 lbs. (according to pattern) complete with equipmentof tins, etc., and can bake 100 rations of bread (150 lbs.) at a baking. The Aldershot pattern is carried in the general service wagons of the Army Service Corps.

The general transport of a field army is furnished by the Army Service Corps. They supply transportation for staff, medical department, signal service, field bakeries, and ordinary ordnance stores. The detail attached to

An Inf. Brig.	comprises	4	officers,	192	N. C. Off. & men,		30	wagons & carts,		232	horses
A Cav. Brig.	"	5	"	158	"	"	39	"	"	181	"
A Cav. Div.	"	5	"	185	"	"	55	"	"	236	"
An Inf. Div.	"	5	"	156	"	"	40	"	"	178	"
An Army Corps	"	6	"	259	"	"	84	"	"	344	"
A Field Bakery	"	4	"	305	"	"	56	"	"	251	"

The Army Service Corps has two departments: "Transport" and "Supply." The Supply companies furnish clerks, storekeepers, issuers, coopers, carpenters, butchers, bakers, etc. It is their duty to issue, as it is the duty of the Transport Department to convey, food and supplies from the advance depot to the troops.

A Bearer company accompanies any large detachment of troops whenever it is likely to come into collision with an enemy. It comprises

1 Surgeon Major.
2 Surgeon Captains, or Lieutenants.
1 Warrant Officer.
1 Quartermaster Sergeant.
1 Compounder.
4 Sergeants.
1 Bugler.
32 Bearers.
21 Rank and File.

Total, 64.

Transport attached from Army Service Corps:

1 Subaltern.
1 Sergeant.
10 Privates.
29 Drivers.
63 Horses.

In the British service the food supplies taken with a battalion of infantry in the field are as follows:

On the man.—Some food (biscuit or bread in haversack and meat in mess tin) to last during the march or battle, until the supply wagons come up—probably late in the day—and an emergency ration (hitherto called the "iron ration"), which is only to be used under orders from the general or other officer commanding the force on the spot (except in case of dire necessity) and then the fact must be at once reported to the brigadier or general commanding the division.

In the company and headquarters wagons.—One day's reserve ration of biscuit, meat, and groceries, in cases; and a pannier with one day's groceries, broken up for distribution on arrival in camp.

In the supply wagons.—One complete day's rations (fresh or preserved, according to circumstances) for regimental issue on reaching the camping ground.

Water is supposed to be obtained locally, but every man should carry water or tea in his water-bottle on the march.

Summary of food, for which the commanding officer is responsible, on marching off in the morning from camp or quarters :

Carried by the men	1½ rations
Reserve rations in headquarters and company wagons	1 "
And 1 day's groceries in panniers	
Rations in supply wagons (for issue on arrival in camp)	1 "

Total, 3½ days' regular rations, and 1 day's extra groceries.

The wagons carry also 2½ days' forage for the horses, riding and draught.

The system of supply of rations, etc., in the field must vary more or less, according to circumstances. It would usually, however, be as follows :

The men would start with some broken rations in haversack and messtin, a special issue being made to provide this, on leaving barracks or ship, and with "emergency" rations, as may be ordered.

The regimental transport would start with the supplies before described.

As soon as the troops arrive at a camping ground, wood for cooking and grass for horses would be cut locally by fatigue parties told off for the purpose, and the cooks would prepare the kitchens.

As soon as the regimental transport arrives, the distribution of the supplies would take place. The amount of meat and biscuit or bread to be handed over to the cooks at once must be settled. It will often be convenient to hand over a portion only for the men's dinners, and to cook the remainder afterwards, and issue it to the men cold for the following day's march. The groceries and a portion of the biscuit or bread would usually be issued after the dinners had been provided for. Grocery panniers, carried in the company wagons, are provided to facilitate the distribution of groceries by the quartermaster to companies, and by companies to the men.

Unless there is extra transport available, it will be always found difficult to carry either fresh bread or fresh meat on the regular supply wagon. Meat as a rule should be slaughtered, and bread baked, when required for issue.

As soon as the regimental supply wagons have been emptied, they should be driven to the commissariat supply depot, and filled up for the next day's march.

The next morning fires would be re-lit and tea or coffee (issued from company grocery panniers) prepared, if possible, before the march.

"Whenever it is practicable to do so, rations should be issued direct to the soldier in quantities to last two or three days. It teaches him to economize his food, so that when it becomes necessary, as it frequently is in war to give him several days' supply at once, it may not be a new thing for him

to exercise discretion and care in using them properly. Commanding officers in our army do the reverse invariably. When given several days' rations for their men they keep it in bulk, if possible, and issue it in small quantities; telling you that if they gave it out to their men at once, they would eat it all in one day, or throw away what they could not eat, after their first meal. This is the old story of treating our men as foolish children. Let us in future endeavor to teach them to reflect and act as they would in civil life regarding their food."—(Soldier's Pocket Book.)

Every infantry soldier for whom a rifle is provided, carries 70 rounds of ammunition, and the regimental supply wagons carry a reserve supply of 40 rounds per rifle more. This amount must be maintained by the officer commanding the battalion.

The regimental transport for a battalion of infantry is as follows, when wagons are used:

Cart for intrenching tools	1— 2	horses
Carts for ammunition (small arm)	4— 8	"
Wagons for headquarters' supplies and baggage	2— 8	"
Wagons for companies' supplies and baggage	4—16	"
Wagons for regimental supplies	2— 8	"
Wagons for tents	3—12	"
Pack-mules for ammunition	2	mules
Spare mule for medical panniers	1	"
Spare mules or horses	4	"
Total	16—61	horses & mules

The regimental transport is in charge of a subaltern officer with a detail of 1 sergeant, 24 drivers and 12 wagon-men.

When the regimental supplies are carried on pack-animals, a detail of 92 drivers is required for the 240 pack-animals. In this case no wagon men are detailed.

Where camels are used, as they can carry twice the load of a horse, mule, or ox, only 120 camels are required for the same service.

"The worst transport, and the most difficult to manage, is that by pack-animals. As a rule, there will always be field artillery with an army, and wherever it can go, wheeled transport can follow."

"During the late war in America every species of transport was tried; animals, whether mules or horses, carrying loads on their backs, were given up at an early period of the war, and latterly the whole transport of both armies, except the conveyance of the sick, was performed by long wagons drawn by six mules or horses, and driven by one man, who rode the near wheeler."

THE UNITED STATES SERVICE.

The methods adopted in the U. S. service are probably more suited to campaigning in this country than any European model, and are therefore placed next to our own service regulations, in order that more apt comparison may be made. The following is an abbreviation of paragraph 1249.

U. S Army Regulations, 1881, prescribing the means of transportation of camp and garrison equipage for armies in the field:

2. For the headquarters of an army corps, 2 wagons or 8 pack-mules for baggage, etc.; 1 two-horse spring wagon, 1 two-horse wagon and 10 extra saddle horses for contingent wants; 2 wall tents for the personal use and office of the commanding general; 1 wall tent for every two officers of his staff.

3. For the headquarters of a division, 1 wagon or 5 pack-mules for baggage, etc.; 1 two-horse spring wagon, and 5 extra saddle horses for contingent wants; 1 wall tent for the personal use and office of the commanding general; 1 wall tent for every two officers of his staff.

4. For the headquarters of a brigade, 1 wagon or 5 pack mules for baggage; 1 two-horse spring wagon, and 2 extra saddle horses for contingent wants; 1 wall tent for the personal use and office of the commanding general; 1 wall tent for every two officers of his staff.

6. These wagons and pack-mules will include transportation for all personal baggage, mess chests, cooking utensils, desks, papers, etc. The weight of officers' baggage will be reduced so as to bring it within the foregoing schedule.

7. Commissary stores and forage will be transported in the supply trains. When they are not convenient of access, and when troops act in detachments, the quartermaster's department will assign wagons or pack mules for that purpose, but the baggage of officers or troops, or camp equipage, will not be carried in the wagons or on animals so assigned.

8. For every regiment of infantry, cavalry, and heavy artillery of less than 300 men, for baggage, camp equipage, etc., 1 wagon; over 300 and less than 700, 2 wagons; over 700, 3 wagons; 3 wall tents for field and staff; 1 shelter tent for every other commissioned officer; 1 shelter tent for every 2 non-commissioned officers, soldiers, servants, and camp followers.

10. For the artillery and small arm ammunition train: the number of 12 pdr. guns multiplied by 122 and divided by 112; the number of rifled guns multiplied by 50 and divided by 140; the number of 20 pdr. guns by 2, and the number of 4½ inch guns multiplied by 2½ will give the number of wagons allowed.

The number of guns in horse-batteries multiplied by 100 and divided by 140, will give the wagons allowed.

For the reserve artillery, ammunition of 20 rounds to each gun in the armies, the number of wagons allowed will be obtained as follows: multiply the number of 12 pdrs. by 20 and divide by 112, and the number of rifled guns by 20 and divide by 140.

For every 1000 men present, armed and equipped for duty, of cavalry, infantry, and heavy artillery, for small-arm ammunition, 3 wagons.

For carrying fuses, powder, and primers, with the reserve artillery ammunition train, 2 wagons.

11. For general supply train to each 1000 men, cavalry, infantry and heavy artillery, for forage, subsistence, etc., 7 wagons, sufficient to carry 8 days' supply; to each cavalry division, exclusively for forage, 50 wagons; to each battery for its proportion of subsistence, forage, etc., 4 wagons; to

each horse battery, for the same purpose, 4 wagons; to every 25 wagons of the artillery ammunition train, 5 wagons additional for the forage of the animals of the ammunition and additional wagons, baggage, camp equipage, and subsistence of wagon-masters and teamsters. Ammunition trains will be loaded exclusively with ammunition, so far as practicable. The baggage of drivers will be carried in the additional wagons allowed for that purpose.

To each brigade of infantry, cavalry, and artillery, of not less than 1500 men, for hospital supplies, 2 wagons; for every 1000 men additional, 1 wagon.

To each army corps, except the cavalry, for intrenching tools, 8 wagons.

To each army corps headquarters, for subsistence, forage, and other stores not provided for herein, 3 wagons.

To each division headquarters, for similar purposes, 2 wagons.

To each brigade headquarters, for similar purposes, 1 wagon.

To each brigade of cavalry, infantry, and artillery, for commissary stores to sell to officers, 1 wagon.

For the ambulance train of each division, 2 wagons; for the ambulance train of an independent command, less than a division, batteries excepted, 1 wagon.

15. It has been shown by experience that the advantage of keeping up regularly organized pack trains is not commensurate with the expense. 200 pack saddles will be carried in the wagon trains of each corps. Whenever it becomes necessary "to pack" officers' baggage, provisions, or ammunition, for short distances, over rough roads and broken country, pack trains will be temporarily made up by taking mules from wagons, not to exceed two from any one wagon.

16. The maximum allowance of forage per day, for horses and mules, will be, for horses, public and private, 6 lbs. of hay and 14 lbs. of grain; for mules, 6 lbs. of hay and 12 lbs. of grain. On a march the ration will be only 10 lbs. of grain.

There is no prescribed field ration for the U. S. Army. When troops take the field on short expeditions, the commanding officer, after considering the object of the expedition, the celerity of the movement required, and the character and extent of the facilities of transportation at his command, decides what articles of the ration he will take with him (ordinarily bacon, hard bread, beans, sugar, coffee, and salt) and leaves at the subsistence storehouse such articles as he does not need, taking the money value as company savings. If the expedition is to be one of extended period, the commander in the field establishes field depots whence the troops or companies can draw rations, and the parts of the ration that are not drawn are credited as savings.

It has occasionally happened in large operations, that the commanding general of an army, owing to scarcity of supplies, has published orders prescribing a limited ration. This prescription only lasted until sufficient supplies were obtained to enable a full ration to be issued. When a limited ration is prescribed, no savings accrue except those that can be made out of the limited ration.

The usual field ration is as follows:

¾ lb. pork or bacon.
1 lb. hard bread or 1⅛ lbs. flour.
15 lbs. beans or peas to every 100 rations.
10 lbs. rice or hominy to every 100 rations.
10 lbs. coffee to every 100 rations
15 lbs. sugar to every 100 rations.
4 lbs. soap to every 100 rations.
¼ lb. pepper to every 100 rations.
1 gallon vinegar to every 100 rations.
4 lbs. yeast powder to every 100 rations, when flour is issued.

No size and weight of packages to suit the army wagon is at present prescribed. The following are the usual weights of package:

A bag of sugar weighs 100 lbs. net.
A bag of flour weighs 100 lbs. net.
A box of biscuit weighs 50 lbs. net,
A bag of rice weighs 100 lbs. net.
A barrel of salt weighs 280 lbs.
A box of soap weighs 60 lbs.
A side of bacon weighs 35 lbs.
A barrel of pork weighs 200 lbs. net. (370 lbs. gross.)

Approximate weight of 100 field rations (bacon and hard bread) 270 lbs. gross:

Gross weight	1,000	rounds	rifle	ammunition	107 lbs.
" "	1,000	"	carbine	"	105 "
" "	1,200	"	revolver	"	91 "

Approximate weight of stores and equipage, etc., of 3 officers, 60 men and 63 horses for 30 days:

	Cavalry.	Infantry.
Officers' baggage, supplies and tentage	600 lbs.	600 lbs.
Rations	4,860	4,860
Tentage	432	324
Ammunition, 200 rounds per man	1,260	1,296
Ammunition, 50 rounds per man, revolver	240	
Camp and mess utensils	522	485
Soldiers' winter clothing (each 2 blankets, ½ shelter tent, 2 shirts, 2 undershirts, 2 pairs drawers, 1 rubber blanket or poncho, 3 pairs stockings)	1,020	1,020
Horse shoes and nails	250	
Grain, 6 lbs. per head per day per animal	3,780	
	12,964 lbs.	8,585 lbs.

Some idea of the amount of transport required by an army in the field may be gathered from the following statistics:—

In 1862, McClellan's army before Richmond, numbering 80,000, had in possession the following transport:—

3,100 wagons,
350 ambulances,
17,000 horses and 8,000 mules.
} 40 wagons per 1,000 men.

After the battle of Antietam, the means of transport were :—

3,911 wagons.
907 ambulances,
21,176 horses and mules. } 49 wagons per 1,000 men.

Generals Meade and Burnside, in the Wilderness campaign, had for an effective force of 125,000 :—

4,300 wagons,
835 ambulances,
29,140 horses and mules. } 34 wagons per 1,000 men.

In the Appomattox campaign, 22 wagons per 1000 men.

In Sherman's march through Georgia, 42 wagons per 1000 men. These wagons contained 20 days' supply for an army of 65,000 men, and they were replenished at the expense of the country through which he marched.

The transport furnished for an army corps (43,191 all ranks) in the American service, is stated to be as follows :—

	Officers.	Combatants.	Non-combatants.	Carriages.	Horses & Mules.
Ammunition column	12		350	121	346
Supply train....	26		774	469	2,967

The difference between the "fighting" and "ration" strength of the corps should be noted ; the former is (exclusive of officers) 38,784. and the latter is 43,191.

One hundred rounds of cartridges are carried by the men on their persons, the small-arm ammunition wagons carry 36 additional rounds per man, and 64 rounds per man are carried in the ammunition column. With each field battery 231 rounds per gun are carried, 189 in limbers and caissons, and 42 per gun in the ammunition column. Horse batteries carry 168 rounds per gun with the batteries, and 105 with the ammunition column.

In addition to the ammunition column is the corps train carrying 5 days' supplies of rations and forage. The rations require 344 six-mule wagons, and the forage 125 six-mule wagons. For every 25 wagons there is a wagon-master, 1 assistant wagon-master, and 4 extra teamsters.

The "Subsistence Department" of the United States Army consists of

1 Commissary General,
3 Asst. Commissary Generals, ranking as colonels.
2 Asst. Commissary Generals, ranking as lieut. colonels.
8 Commissaries, ranking as majors.
12 Commissaries ranking as captains.

During the Civil War, the establishment was increased to 29 officers of permanent corps, and 535 officers for the Volunteer corps. Although the magnitude of the operations may be judged by the expenditure ($361,786,991 from July 1, 1861, to June 30, 1865), in referring to the operations of the Subsistence Department, Hon. E. M. Stanton, Secretary of War, said in his report for 1865, "During the war this branch of the service never failed."

THE GERMAN SERVICE.

In the German service there are 21 train battalions, with a company entirely composed of bakers attached to each. These bakers in time of peace are employed in the large garrison towns, to make bread for the

army. Each army corps has a battalion of the train attached, and transport is furnished by 775 two-horse, 261 four-horse, and 469 six-horse wagons. Another authority gives the train of an army corps at 1700 wagons and 6000 horses.

The medical and sanitary departments are admirably organized, as shown by the fact that the death rate, in time of peace, is less than in any other standing army, and in time of war better care is taken of the sick and wounded.

The meat and other biscuits constituting the reserve supplies are made in the military bakeries and packed in cases containing 150 rations, showing place and year of manufacture, and net and gross weights. These supplies, as well as those of preserved foods of all kinds, are subjected every fourth year to a minute inspection, to get rid of those that are bad, and to select such as can be reground and mixed with new flour in the manufacture of new biscuit.

In all recent campaigns, the German armies have been largely subsisted by requisitions and contributions levied on the country occupied by them. In the Franco-German War "the usual forced military contributions which the victors exacted did not exclude a system of pillage and devastation that the present age fondly believed to belong only to a past state of warfare." The aim of the German officers was evidently to exhaust all the occupied towns, and to make it absolutely impossible for them to assist towards the expenses of the war."

Gen. Hamley describes the method as follows:—"The cavalry advanced guard lived by requisitions and billetting. With it were the officers charged with drawing up the requisitions, which were served on the local authorities. A certain time, generally 24 to 48 hours, was specified, within which the supplies must be collected and delivered at the point named. The column meantime marched on; the supplies were loaded on the wagons following in rear, and afterwards issued to the troops in the same manner as from the regular magazines."

THE FRENCH SERVICE.

In the military *renaissance* of France, following the war of 1870-1871, a change in the methods of administration was effected, by which commanders of army corps in time of peace, and of armies in time of war, have absolute control of the supply system—no matter how extraordinary the requirements of the general may be. He alone is responsible to the Minister of War.

The military train consists of 20 battalions (10,383 all ranks), one of which is attached to each army corps. It provides regular transport for the supply columns, ambulances, postal and telegraph departments, and staff. The vehicles for these purposes are kept ready in the Artillery school of each corps d'armée. On mobilization, the number of companies in each battalion is doubled.

To a corps d'armée (40,000 all ranks) is attached 10 train companies, 3 administrative supply convoys, and a section of clerks and workmen, 1 field bakery, 4 ambulances, 6 field hospitals, with 2300 vehicles, and 9300 horses.

A field bakery column in the French army consists of 24 ovens, on wheels, drawn by 4 horses each, every oven baking 160 rations at each baking; of 12 bake-house wagons, in which two of the bakers ride and prepare yeast on the march; of 12 four-horse wagons, and 12 two-horse wagons for flour, salt, etc. The section consists of 4 officers and 259 men, of whom 192 are bakers. The yield of the field bakery per day is about 38,400 rations.

GENERAL CONDITIONS.

It is easier to provide supplies when acting on the defensive in one's own country, than when engaged in war in the enemy's territory; for regular communication with the depots and magazines can be organized, and if obliged to retire the surplus stores can be destroyed to prevent them falling into the hands of the enemy.

When troops are stationary, the question of supply is a comparatively easy one. But when they begin to move, the question becomes more complicated in direct proportion to the rapidity of the movement and the size of the army.

It is now only possible to provide for the subsistence of an army by utilizing a railroad, or a fleet, to maintain communications with the sources of supply. By such means, armies can engage in any operation which will not endanger their lines of communication.

The organization of a line of communications must be perfected in time of peace, for it is difficult to organize a satisfactory system, or to alter an unsatisfactory system, after war is declared. No army that does not possess an organized transport, can enter the field on an equality with another which is provided with such an essential element. Efficient transport is as much a necessity to a modern army as cavalry, artillery, or engineers.

Napoleon III. attributed the disaster of the French armies in the war of 1870-71 to the ignorance of the conditions involved in modern transport, and the failure of the system of supply.

It must be born in mind that during the concentration of troops, the railway lines of communication must not be calculated upon for movement of supplies. Prior to and after the strategical concentration of troops, they will be available.

The hiatus between the terminus of a railway and the front line must be filled with wheeled transport equivalent to the utmost capacity of the railway transport. The number of wagons to be employed depends upon the length of the gap,—the number of troops to be supplied,—and the number and condition of the roads to be traversed.

After a soldier has exhausted the rations he carries on his person, he must be fed from the regimental reserve, which must be immediately replenished from the supply trains. Although the place of these trains is well to the rear of an army during a battle or in anticipation of a battle, it may be necessary during an action to provide subsistence for troops who have failed to receive their rations or who have lost them in the engagement. For this service a portion of the supply train should be moved to within half a day's march from the front line, and opportunities should be

sought to distribute such articles as require no preparation, such as biscuit and canned meat. After the battle, articles which can be rapidly prepared, such as condensed soups, erbswurst, coffee, etc., should be distributed. Neither fresh meat nor fresh vegetables should be issued. The evening of a battle, the regular issue of rations should be made, and the "emergency" ration, if consumed, re-issued. If the battle is resumed the following day, the empty supply wagons are replaced by full ones, which, if the troops are pushed forward, conform to their movements, so as to be at any time available for an immediate issue of food.

When it is expected that the troops shall be partially subsisted by the country which they occupy, a supply officer must precede or accompany the advanced guard. His duty would be to purchase or collect by requisition, provisions for the supply trains. When the inhabitants are not unfriendly, the obtaining of supplies is facilitated by making purchases for cash, and by fixing fair prices. If the people are hostile, the task of supply is most difficult, as they will conceal, carry off, or destroy their resources rather than aid their enemy. A notable example of this kind occurred in the invasion of Russia by Napoleon I., when the peasantry burned everything that could be of use to the invader rather than leave it for his use. Destroying the crops during a retreat checks the pursuit by increasing the difficulties of supply, and gains time to the retreating force.

The transport of supplies from the advanced depot to the front line is effected by convoys; where wagons cover the entire distance between the advanced depot and the front line without changing teams or shifting loads; by relays of wagons, horses and drivers; where the wagons are unloaded at each intermediate station and their contents loaded upon other wagons assembled for the purpose; or by relays of horses and drivers; the wagons not being unloaded until they reach their destination. The latter method implies the wagons belonging to the army—the teams and teamsters being hired locally, and returning to their homes each night, having carried forward a full wagon for a stage, and returned with an empty one.

The method of transport by alternate relays (of wagons or of teams) may incur greater losses, more failures, or greater damage to supplies, than that of convoys, but it accelerates the movement and divides the burden of supplying horses and drivers along the whole line of supply; it does not make the inhabitants reluctant to act as drivers, as they always travel over the same road and return to their homes each evening. Moreover, the inhabitants will collect at the halting stations the necessary forage, as they will be anxious to provide for the welfare of their own teams. Of the two methods of relay, that by teams is preferable, as it saves the time and labor of unloading the wagons.

If the line of communications does not afford security, escorts must accompany trains of supplies from the advanced station to the front line. Where the front line is at a distance from the advanced station in an enemy's country, it is impossible to supply the front line exclusively by means of convoys. Requisitions must be imposed as an absolute necessity, otherwise the troops will suffer, and the strain on the supply department will be greater than any ordinary system can bear.

TRANSPORT VEHICLES.

Lord Wolseley's opinion is, "Our wagons should be light, and not, as they are sometimes, so heavy that the horses can scarcely draw them when loaded, and so badly made that they tumble to pieces from ordinary work. Our artillery equipment and wagons are the heaviest in any army. They are not only calculated to support the work of an ordinary campaign, but to be proof against every possible contingency or accident that can befall them in any part of the globe. Our transport and ambulance wagons are constructed upon plans prepared by the same department as that which makes our gun-carriages; and the result is, our transport material is very heavy and cumbersome. It is better to have light carts and wagons, and undergo the inconvenience of an occasional break-down and loss of a wagon, than that every cart and wagon should be so heavy that no break-down is ever possible. The loss of a wagon now and then is nothing, but the waste of strength in draught occasioned by heavy material is a serious matter."

Description of army wagons at present in use:

	No. of horses.	Weight of wagon,	Weight of load.	Internal Dimensions Length	Width	Depth	Track.
BRITISH.							
G. S. wagon, mark II	4	1960	3360	9 7	4 1½	2	5.8
" " " IV	4	2016	3360	9.8	3.8	1.8	5.2
Bakery wagon	4	3024	4480	10.4	3.11	2.9½	5.2
Ambulance wagon	4	2016	1344	9.5¼	4.3	1.8	5.2
General service cart	2	728	1680	6.0	4.1	1.8	5.2
S. A. ammunition cart	2	952	1344	3.9	3.1½	1.4¼	5.2
AMERICAN.							
Army service wagon	6	*1950	4000	9.6	3.6	1.10	5.0
Ambulance (1892)	2			9.3	4.2	5.3½	5.0
Canadian farm wagon	2	1200	4000	10.6	5.6	2.1	5.0

*Weight, including harness, chains, extra tongue, etc., complete, 2220 lbs.

It would much facilitate the carriage and distribution of supplies if packages were made of such size as to fit the boxes of supply wagons. This does not seem to be stipulated for in making contracts for the American army, although the matter has received attention. Paragraph 2240, "Regulations of the Army of the U. S.," states, "The army wagon being 22 × 42 × 114 inches, inside measurement, boxes for bacon made 20 × 20 × 28 inches, outside measurement, (which will contain 225 lbs. bacon) are convenient for field transportation. The boxes should be tongued and grooved and strapped." Par. 2241.—"When hard bread is put in boxes (the best packages for field transportation) they should be made of seasoned wood (each face of a single board as far as practicable) of a kind to impart no taste or odor to the bread. When two or more pieces are used in making the same face, they should be tongued and grooved together. A box 26 × 17 × 11 inches, exterior measure, will contain 50 lbs. of hard bread; one 28 × 16 × 20 inches will contain 100 lbs."

The stowage of boxes may be estimated as yielding one-fifth more space than that of barrels.

As far as is possible, it is advisable to assort loads of supply wagons so that each shall contain so many rations of each article; so that in case of a

break-down, or loss of a part of the supply train, a proper proportion of the daily requirement would be preserved. When all the coffee, all the flour, or all the bacon is carried each in its separate wagon, it might occur that one or other might be lost, captured, or that a wagon load of one article had been forwarded in mistake for another.

VALUES OF FOODS, ETC.

The value of bacon as an army ration was thoroughly tested during the American Civil War. In the "Recollections of the Late Unpleasantness, by a High Private," he says: "We never tired of bacon or coffee. Beef was always tough, and when salted almost uneatable—salt pork was often rancid and otherwise unpalatable—but with bacon for the foundation of a meal, we could always get along. The smell of frying bacon was most appetizing, and if we happened upon a stray chicken or wandering turkey we had a meal fit for the gods in less time than was consumed in preparing any other food." It is well known that meat suspended in smoke loses its tendency to putrefy, while retaining all its nutritive qualities. Salted meat loses in its brine a large quantity of the substances that are essential to the creation of flesh and muscle, while the brine, besides being useless, forms one-third of the bulk and weight of a barrel of salted meat. Bacon, on the other hand, can be packed in sacks or crates with very little additional weight to carry than the actual food. The regulation ration of bacon is also less than that of other meat.

Tinned beef was used extensively during the Northwest campaign of 1885, and nothing short of absolute hunger would induce the men to eat it after a few days' experience. The only way to give it a relish was to steep it in vinegar, or make a stew with vegetables when they could be obtained, which was very seldom.

Pemmican made of dried beef pounded into fibre, and mixed with the boiled fat of the animal, has been used with advantage in some polar expeditions. The original buffalo pemmican was the sole winter traveler's food in the Northwest for many years, and the feats of endurance and hardships undergone upon that diet are matters of record. Beef pemmican is not considered to be as "staying" as buffalo.

There is no better biscuit made than that which is manufactured from Manitoba hard wheat flour. It is sweeter, more palatable and more nutritious than any other biscuit made, and will keep longer, even under unfavorable circumstances, than ordinary ships' biscuit. I have examined and tasted lately, biscuit baked in 1885, and which was carted about over hundreds of miles of prairie before it was returned to Winnipeg with other unused stores, and I found it perfectly good, though at least seven years old.

Beans are a great addition to a soldier's ration. They are portable and cheap, and contain more solid nourishment than any other vegetable. No Canadian land surveying party would think of going for a six months' excursion into the wilds without a supply of beans.

Molasses or syrup are often taken as a corrective to a pork diet, and prove an excellent anti-scorbutic.

Indian corn meal was largely used in substitution for flour during the

American Civil War, and the men became skilled in making pan-cakes fried in bacon fat and "pones" baked in the ashes.

Tea is generally preferred to coffee by men who are accustomed to rough it in Canada or Australia. It requires less skilful preparation, and more effectually disguises unpleasantly tasting water, and if fresh water is added to the leaves and boiled over night it gives the opportunity to fill the water-bottles with something more palatable and thirst-quenching than water alone. No sugar should be added to this morning draught.

The value of foods have been estimated as follows:

	Warmth.	Strength.	Nutriment.
Potatoes	11 per cent.	3½ per cent.	22½
Rice	25	3	88
Beans	28	18	87
Indian corn meal	40	18	91
Smoked Bacon	60	11	28
Fresh Beef	33	14	26
Cheese	33⅓	51	86

The rations issued during the Red River Expedition were:

1 lb. salt pork, ¾ lbs. of bacon, or 1½ lbs. beef.
1 lb. biscuit or 1¼ lbs. bread.
⅓ pint white beans or ¼ lb. preserved potatoes.
1 ounce tea.
2 ounces sugar.
½ ounce salt.
1–36th ounce pepper.

Upon this ration, Lord Wolseley says, "The men did the hardest work I have ever known troops called upon to perform, and no force in the field could have been healthier."

Packages of food.—Food is generally sent to an army in barrels or cases of the following approximate weights:

Packages.	Average Weight in lbs. gross.	net.	Number of packages to 1000 rations	Gross Weight of 1000 rations.
Biscuit.....barrels	106	84	11 to 12	1261.9 lbs.
Salt beef..... do	360	200	5	1800 "
Salt pork..... do	325	200	5	1625 "
Flour..... do	219	196	5.102	1117 "
Flour.....double bags	104	100	10	1040 "
Sugar..... barrels	460	390	0.3205	179 "
Ground coffee.cases of 20 lb. p'kg's.	133	100	0.208	27 "
Tea.....chests	136	110	0.111	12.74 "
Rice.....barrels	411	340	0.192	75.55 "

If biscuit and groceries were packed in boxes containing 100 rations net (the cases could be used in camp for kindling wood), the issue would be much simplified. The gross weight of a case containing 100 lbs. biscuit would be 132 lbs. and of 100 rations of groceries 55 lbs. A box 1.6 × 2.6 × 1.4 interior measure will contain 100 lbs. biscuit, and 20 boxes weighing 2640 lbs. gross, or 2000 lbs. net, will pack into the ordinary farm wagon box. A corresponding quantity (2000 rations) of groceries, weighing 1100 lbs. gross,

or 500 lbs. net, will occupy the same space if properly compressed. Thus a wagon could carry these rations for 1000 men for one day, if provided with a box sufficiently high.

Small Arm Ammunition—Size of box : Mark V. Length exterior.... ...20.5 inches
Width..... 6.8 "
Depth..... 8.5 "
Weight empty.....12 lbs., 4 oz.

Contains 600 rounds Martini-Henry ball cartridge weighing 79 lbs., 4 oz., or 560 rounds. Snider ball cartridge weighing 70 lbs., 4 oz.

A farm wagon box will contain 60 boxes ball cartridge, or 36,000 rounds Martini-Henry, weighing 4755 lbs., or 33,600 rounds Snider, weighing 4215 lbs. gross weight. This load will require four horses.

CONCLUSIONS FOR SERVICE IN CANADA.

A step in advance has been made by the Militia Department in the creation of a Quartermaster General's department. In Capt. Wagner's interesting essay on "The Military Geography of Canada," he quotes : "the weakest spot in the Canadian Militia system is the total absence of any nucleus of transport." We should thank him for having overlooked many of our glaring deficiencies, and take the hint he has given us, though we may not concede that our organization is as perfect as it may appear from a distance. Like our American neighbors, we can adapt ourselves to circumstances better than most people, and if the Quartermaster's Department does its duty (as we have no reason to doubt that it will) we can organize a system of transport as readily and efficiently as was done in the American Civil War.

We start with the advantage of having, in the wagon of the country, a better vehicle than can be found in any European state. It is lighter, better proportioned, more adaptable to different loads and cheaper than any European model; and, given good material in construction, is, I think, stronger and capable of carrying heavier loads. In this opinion I am borne out by many officers of the Imperial service who have visited or live in Canada, and by the experience of the Mounted Police.

Next in importance is the efficiency of our teamsters. I can safely say that no other country in the world can produce as self-reliant and capable teamsters as are to be found on the American Continent. They not only understand how to take care of their teams, but are apt and ready in cases of emergency.

Then, as to horses. Canadian horses are sought for by American buyers, because they are hardy, tractable, and, with good management, capable of more sustained work than any class of horse to be purchased for as low a price.

Thus, we start under favorable conditions. All that is needed is to establish the organization which will enable us in the shortest space of time to take advantage of them in case of war. This can easily be done : 1st. By authorizing commanding officers to procure (by hire) from local sources, the regimental transport allowed for each arm in the Imperial service. 2d. By authorizing the officers commanding districts to secure (by hire) the

divisional transport prescribed for a division of the British army. 3d. By appointing officers to the Quartermaster General's staff in each district whose duty would be to organize the supply department of each division to which he is attached. These officers need not be on permanent duty, but should be granted a small allowance annually, to enable them to purchase maps and collect data for the Quartermaster General's Department. Thus the nucleus of an organization could be effected, capable of expansion in case of necessity.

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THE DISTRIBUTION OF GUNS IN AN ARMY CORPS.

By Major MAY, Royal Artillery.

From The United Service Magazine, London.

THERE is no feature of modern tactics more distinctive than that which characterizes the application of artillery. For artillery alone of the three arms can claim to be able to dispense with a tactical reserve, and it is in its bold disregard of what is a necessity to infantry and cavalry that the arm has most markedly shown its independence. I say "can claim" advisedly, for the triumphs of the German batteries in 1870 have surely supplied a solid foundation to such pretensions. It may be that where armaments are more equal on both sides the boldness which distinguished the batteries of the victors in that great campaign may be found unjustifiable but until the lessons of twenty-four years ago are contradicted, we must largely be governed by their teaching. It cannot be doubted that this new spirit of independence is an admirable one. I believe it shows that gunners are more anxious than ever to be closely allied to their brethren of the infantry and cavalry, and that they chafe at any re-

strictions or organizations which may tend to hold them aloof. All the guns want to go into the fight early, and stay in it to the very end—if they can. Of course, however, zeal and enthusiasm will not alone suffice to bring such ambitions to a successful issue. Improvements in matériel were needed to give substance to the dream, and they have certainly supplied a reasonable basis to what might otherwise have remained an impracticable aspiration only. Targets and percentages have yielded tangible proof of the capabilities of modern guns, and it is because they are too useful to be wasted standing idly in rear that their eagerness has been gratified.

These improvements have been a long time in asserting their influence. As lately as 1866, the Austrian Army of the North, though all their guns were rifled, held a reserve in hand of 16 batteries or 128 guns, and it was the artillery reserve on the same side which earned so splendid a reputation for itself at the battle of Königgrätz. On the Prussian side, too, we find an artillery reserve of 16 batteries with the first army commanded by Prince Frederick Charles. Nor even in 1870 was the new principle universally accepted. The Germans, it is true, modified their views on artillery tactics considerably after 1866, and none of their guns were held in reserve when they overran France four years later. When we turn to the French, however, we find that the changes in tactics necessitated or rendered desirable by improvements in the ballistic powers of modern field-guns had not been appreciated, and that the Army of the Rhine followed old traditions in forming 96 guns into a reserve.

Neither the experiences of the vanquished in 1870, nor of the victors in 1866 were, however, calculated to provoke imitation as regards artillery tactics, and of late there has been an universal tendency to dispense with a reserve for artillery. It may fairly be objected that to hold a reserve in hand when you join battle is a first principle of tactics, and that artillery can claim no immunity from the destruction which wastes the other arms. This is, to a certain extent, true, but after all does not furnish an unanswerable argument. Both infantry and cavalry utilize reserves and secondary lines to rally and give cohesion to troops worn out by a prolonged strain, or perhaps disorganized in the moment of success. Also it is undoubtedly necessary to keep a force in hand ready to deal with any sudden emergency or new development of the battle. But losses do not affect artillery so greatly as other troops. It can, so to speak, lose more blood without being perceptibly weakened. For even if a battery were to lose half its strength, its fire effect would not be greatly diminished. The guns may be worked by three men at a pinch, and are themselves none the worse for being hit. Moreover they form a solid framework round which men preserve confidence and steadiness, and each supplies a rallying point while it remains in position.

As regards the other purpose for which a body of troops is usually kept intact, batteries engage the enemy at such considerable ranges nowadays, and are possessed of so much mobility, that many think it will often be possible to withdraw them from one position during the progress of an action and throw them into the fight somewhere else if necessary. Hoffbauer mentions several instances where batteries made flank marches of this

description under fire with success, and Prince Kraft gives us more than one example of similar tactics from his experiences at the battle of Sedan. Someone, however, may possibly argue that, if the destructive effect of artillery fire is to be as great in the future as we believe it will be, batteries will be so mauled during the artillery duel that they will be unable to fight again until refitted from some reserve which has been carefully nursed with this end in view. The answer to that objection is that when you are going into battle you must make up your mind to win it at all hazards, and that it is impossible to be too strong at the decisive point. If you lose your first battle, you will leave all the batteries which have suffered heavily in men and horses behind you, you will lose your prestige, and you may lose the campaign. If, on the other hand, you win it, the chances are that you will capture horses from the enemy which will replace wagon-horses that may have been passed on to the guns. Your guns will be none the worse for the bullets they have received, and the detachments, if they have been economically used, and only those numbers actually necessary for working the gun have been exposed to fire, will not in all probability have suffered more losses than can be made good by calling in men who have not been engaged. After St. Privât the ammunition columns of the German Guard Corps gave 200 horses to the batteries. Von Dresky after he had lost 75 per cent. of his horses at Vionville probably made a similar call on his wagons, for we certainly find him in action two days later at Gravelotte; and at this last battle Hoffbauer tells us how one of the German batteries, which had suffered very severely, requisitioned ten cart-horses from a neighboring farm and was thus enabled to appear in the firing line again a few hours later.

It seems to me, however, that the strongest argument of all against a reserve for artillery is supplied by the fact that such an organization has almost always led to the guns hanging back so far on the line of march that they were unable to reach the battle-field in time to be of service. There is an ominous ring about the word; it reminds us of the days when guns were regarded as "train," and their detachments and even officers as artificers, of columns crawling slowly through miry roads, of guns wasted even on the battle-field because no one could handle them. I wish, however, to guard myself against being understood to say that I believe what practically constitutes a reserve, at any rate a temporary one, is altogether outside our contemplation. In a close country such as England there might not always be room for all the guns to be in line at the same moment, and some might have to stand aside till opportunity offered. With very large forces a similar difficulty might arise in any country, and it is legitimate to doubt whether guns could always fire over one another's heads on active service (which will sometimes be necessary if they are all to be in action simultaneously), as they do at peace manœuvres. On the defensive it might often be judicious not to display all your strength in guns from the outset, but to hold some back for the crisis of the day.

The principles which govern the formation of a reserve for artillery which I have thus slightly sketched are reflected in modern organizations by the formation of divisional and corps artilleries. The former to be used

in the closest coöperation with infantry, the latter to lie ready to the grasp of the general commander, and yet to be engaged from the outset in accordance with the notions imbibed from the experiences of 1870. Since a sudden development of the fight can often only be opposed by mobility, this Corps Artillery is composed of a proportion of horse artillery batteries. While, however, this organization is still universal, we hear murmurs from some who are not without authority that demand a more intimate combination of guns with infantry. Perhaps Colonel Wille's opinion that the artillery duel is a thing of the past, is the most striking example of this new phase of thought, but in truth artillery, ever since it has existed as an arm, has always been striving for a closer alliance with infantry.

If we cast our eyes for a moment backward, we shall find that the origin of a distinction between guns allotted to infantry, and those united to form a reserve, lay largely in a difference of calibre. The battalion guns drawn by hand were necessarily light, and were therefore lacking in power, and their fire had to be supplemented by that of the heavier pieces of the reserve. As artillery became endowed with greater mobility the primitive battalion guns disappeared, and divisional artillery organized in batteries took their place. In the vast armies of the First Empire, the retention of a portion of the guns as a special force under the hand of the commander-in-chief likewise fell into disuse, and all the artillery was divided up amongst the various corps.

Napoleon did not keep any army artillery reserve in hand at all. Yet no general ever used masses of guns to produce a telling effect more lavishly than did he. But he did it in what was then a new way. If he wanted to strike a special blow, he did not hesitate to seize on the batteries of the army corps, which happened to be in reserve, for this purpose, and, since that corps was usually the Guard, it was to the artillery of the Guard that he tells us he was indebted for his most brilliant successes. In exactly the same way the batteries of the 3d and 10th German Corps were thrown into the fight on the 18th of August, 1870. No general would refrain from calling forward a brigade or division of infantry if necessary, and neither need he respect the unity of the corps where artillery is concerned.

The tactics of Napoleon's time were the outcome of necessity, due to defective matériel. The guns dispersed amongst brigades and divisions opened the action and coöperated with the attack of the infantry as far as possible. To prepare the way for a really decisive blow, reinforcements were however needed, and then the guns hitherto out of action were brought up, at the shortest possible ranges, and poured in a very rapid and overpowering fire of case. Case was the only really effective projectile then, and therefore the guns which were to breach the enemy's line, had to be grouped close together in front of their objective, and very near to it. It was manifestly hopeless to expect several batteries in position at some distance apart to concentrate their fire when using so feeble a projectile, and mobility was still so inadequate, and the distance between lines of battle so small, that it would have been hazardous, if not impossible to assemble guns originally dispersed along a line of battle at a selected spot. At the same time, it was then possible to allow a large proportion of guns to stand

idle during the earlier hours of a battle, because artillery fire was not deadly beyond case ranges, and it was not yet a necessity to overpower it before the infantry could advance to the assault.

On the other hand, when entering on a struggle for life or death, such as the artillery duel with improved matériel grew to be, it was imperative to put forth one's whole strength so as to gain the upper hand, and that too, if possible, early in the day. Guns could scarcely be deployed for action too soon, nor could there, if ground permitted, be too many of them. Whereas formerly a Napoleon would have relied on his divisional batteries to support and cover the infantry advance, but would have paved the way for their final rush with a mass of guns carefully nursed for that special purpose, a modern general will, it is expected, engage every gun he has from the very beginning, and he will not scruple to send to the front every battery from the corps in rear on the line of march. Later on, when it is desirable to send batteries again forward to decisive ranges in order to shake the defender's line at the point to be assaulted, no pedantic distinctions between Corps and Divisional Artillery will, I believe, be thought of. Those batteries or brigade divisions, which are most capable of movement will go on, and no one will stay to consider what their precise designation may be. But if guns are all of the same calibre, come into action as far as possible together, and towards the close of a fight are seized upon indifferently by a general, why unnecessarily complicate organizations by labelling them with different names? There is seemingly more solid common-sense about the argument in favor of subdividing all the batteries amongst the divisions.

Abroad, where artillery regiments are quartered permanently with the units they will support on the battle-field, the matter has a slightly different aspect to that which it assumes with us. The more intimate the connection between guns and battalions in peace time, the more genial is their coöperation likely to prove in war. A real territorial scheme for all arms, such as exists in France and Germany, is, however, an ideal to which we in England can never hope to attain. On taking the field, our batteries and battalions will be, and must be, at best, acquaintances, not old friends; during the progress of a campaign, however, a closer and more universal union might undoubtedly be engendered were the course indicated, adopted by us. Other considerations more weighty than those of good fellowship plead eloquently for this. On the line of march the Corps Artillery will often introduce an element of uncertainty. If the corps is moving on two or three roads, on which is it to be? Is it always to be foreseen which column may stumble first on the foe, or may receive his bow? And if not, may not one force of infantry have too many guns and another too few? If the corps move on one road, all the artillery, we may assume, will march towards the head of the column, but in that case then deployed corps and divisional guns will stand side by side in the line of battle without respect to any organization.

If we briefly glance at a few of the battles of the war of 1870, I do not think we shall find those refinements in the applications of corps and divisional artillery, which we might be led to expect from the theoretical

teaching we plod through in the text-books. It has been contended that at Spicheren the 14th German Division would have found its task a less arduous one had its infantry brigades been supported by half the batteries of the Corps Artillery in addition to its own. Owing to the separation of six batteries to form that unit they had, as it was, to draw on two other army corps for support in artillery, and the guns which are supposed to be at hand to sustain the fight at critical moments were too far away to be of any service to their comrades. At Colombey the 13th Infantry Division was placed in much the same difficult position as its fellow division had been in at Spicheren, and, had all the guns of the corps been allotted to the divisions, reinforcements which were much needed, would have been earlier at hand. The Corps Artillery were on that day too far to the rear on the column of march, the field artillery portion of it never got into action at all, and its two horse artillery batteries are to be found southwest of Noisseville with the Corps Artillery of the 1st Corps. On that day, therefore, it can scarcely be said to have lent much assistance to its comrades. There is in fact a danger lurking round a system which even nominally tends to hold guns aloof from the other arms, and it is probable that the idea of 1866 had not been wholly purged from the minds of German generals in these first battles of the 1870 campaign.

If we turn to the battle of Wörth, a fight conspicuous for the vast mass of guns brought into action by the victors, we do however find the batteries all deployed early in the day, and the Corps Artillery may perhaps claim here to have formed a *point d'appui* for the remainder to form on. But the tactics of the German batteries later on in the battle have been adversely criticised. It is said that they hung back needlessly, and that when the infantry were crying out for a closer support from them they did not push on to lend their aid with that genial recklessness which distinguished their action in some subsequent battles. There was rather too much "Corps Artillery"—something of the notion of holding aloof in reserve—about their handling.

When batteries were sent forward what do we find? Is the Corps Artillery sent on as one unit under the hand of the commander-in-chief in the fashion we may describe as orthodox? Not at all so. Distinction disappeared under the stress of action and the force of circumstances, and the Corps Artillery batteries were divided. Let us listen to the official account. "It was above all things necessary to reopen the artillery fire, which had been masked by the advance of the infantry on the west bank (of the Sauer). The batteries of the 10th Division and *half* the Corps Artillery crossed the Wörth bridge, which had been restored by the pontoon company, and endeavored to make their way through the blockaded streets. The artillery of the 9th Division, the 3d Light and the two H. A. batteries of the Corps Artillery, escorted by a company of the 6th Regiment, advanced as far as the Wörth-Görsdorf road; the line of guns was subsequently reinforced by batteries of the 1st Bavarian Corps."

I think it may fairly be argued that no peculiar advantages were derived from the organization of a special body of Corps Artillery on this occasion, but rather that, had the batteries all been part and parcel of the divisions,

they would probably have been in more intimate coöperation with their comrades. Later on, towards the close of the fight, we again read in the official account that "five batteries of the 5th Corps were intermingled with the line of guns of the 11th Corps." A footnote tells us that those five batteries were the 4th, 5th, and 6th Light, and the 5th and 6th Heavy. Again, a reference to the "order of battle" of the German armies shows us that four of these formed the divisional artillery of the 10th Infantry Division, while the 4th Light battery belonged to the Corps Artillery. The remaining two heavy batteries of the Corps Artillery of the 5th Corps did not come into action again when the remainder pushed on towards Elsasshausen. Perhaps this disintegrating process must always go on during a fight, and batteries must get into position how and where they may, but if that is the case, as I believe it is, why not recognize the fact at once, and cease from adding a certain obstructive element to the free and liberal application of guns by making nice distinctions which are more likely than not to be forgotten on active service? I believe a careful examination of the exact movements of the batteries of the 11th Corps at Wörth will show that the organization we are discussing, rather hampered than assisted their coöperation with the infantry: that, as the battle deepened, batteries pushed their way on singly, and that it was found impracticable to insist on any distinction between those allotted to divisional, or Corps Artillery. The existence of a Corps Artillery tended indeed in this case specially to draw batteries away from their divisions to form a great mass of guns, but it is only fair to add that this has been attributed to the fact that the officer in command of the Corps Artillery had during peace time been in command of those now belonging to divisions. Thus these latter rather looked to him for orders than to the general under whose command they had been placed on mobilization. It has been said too that the divisional generals were out of touch with their batteries, and were somewhat tardy in sending them orders.

If we turn for a moment to Vionville, a battle of a particularly impromptu type, I do not think we shall be able to discover any distinction whatever between the manner in which corps and divisional batteries were employed. When guns were needed, Von Alvensleben did not stay to consider under what nomenclature they might figure on paper. Nor would anyone but a pedant do so under similar circumstances. Whatever could move was sent on to support the troops already engaged and to grip the French more tightly.

Thus the guns of the 6th Infantry Division were seized upon by him without the least compunction or ceremony, and they were sent ahead just as were the Corps Artillery batteries over which he had a more legitimate control, no one will cavil at his action. But what one cannot help observing is that, had there been originally no specially formed Corps Artillery, the 5th Division would have been more powerfully supported by guns in their hour of need, and the divisional artillery of the 6th Corps would have been pushed boldly forward by the commander-in-chief as they in fact were.

It is extremely interesting to note how on this day the force of circum-

stances again dissipated the arrangements and theories which read plausibly enough on paper, and might even have been carried out in the orthodox fashion during field days or manœuvres. Corps Artillery, we are taught, is a special body to be held together for a particular purpose. It is organized under a distinct commander. It is theoretically always ready for the grasps of the commander-in-chief. Now if any one will take the map of the battle of Vionville attached to the German official account, where the positions of all the various bodies of troops are shown between 4 and 5 P. M. on the 16th of August, I think he will be astonished how little the schemes of the drill-book withstood the exigencies of a critical battle. He will find corps and divisional guns intermingled together, and that too not only with batteries belonging to their own, but with those of other Army Corps. The integrity of the body set apart for the particular purposes of the corps leader is in nowise respected.

As an example let us consider the batteries of the Corps Artillery of the 3d Corps. They were the 1st and 2d Horse Artillery batteries of the 3d Field Artillery Regiment, and the 3d and 4th Heavy and the 3d and 4th Light batteries of the same unit. A reference to the map will show us the two horse artillery batteries standing separated from one another in the great line of guns to the south-east of Flavigny, the 3d Heavy field battery forms one of the same mass, but the rest are far away. One, the 3d Light Field battery is part of a group of batteries on the north-west of Vionville, none of which belonged to the same corps as itself, while the 4th Light and 4th Heavy Field batteries are quite by themselves as far as artillery is concerned, a little to the north-east of Vionville. The Corps Artillery of the 3d Corps is therefore completely scattered and dissolved in the general fight, and there is no pretence whatever of its waiting for the beck and call of its corps commander. And if we investigate the positions of the batteries that constituted the Corps Artillery of the 10th Corps a very similar state of things is revealed.

The batteries which composed this body were the 1st and 3d Horse Artillery batteries of the 10th Field Artillery Regiment, and the 5th and 6th Heavy and 5th and 6th Light batteries of the same unit. Referring once more to the map of the official account we find the 1st Horse Artillery battery forming part of a group of guns a little on the northwest of Vionville, the 3d Horse Artillery battery placed amid the mass of artillery on the south-east of Flavigny, the 5th Heavy amongst the batteries which prolonged this line on the other side of the road, the 6th Heavy is one of the four batteries which were posted still further to the south-east on a low hill, while the 5th and 6th Light batteries are discovered on the west of the Tronville copses some 3000 yards away to the west of Vionville. If we stayed to closely examine in a similar manner the exact movements of the various Corps Artillery batteries at Gravelotte, we should find them more united, but we should have equal difficulty in recognizing the advantages that are claimed for their organization as a special unit, and should find that there was but little distinction between the method in which they and those of the divisional artillery were handled.

I have altogether confined my inquiry to offensive actions so far, and it is

with reference to these that the utility of the prevailing organization is most strikingly brought to light. When fighting on the defensive it would often be judicious to hold some guns in hand. It would I believe rarely be wise to show all of them at the outset, and batteries might frequently be called up from the rear to repel or meet a flank attack, or to throw themselves freshly into the fight to check the assault of the foe at the critical moment of the day.

Moreover, the battles of which I have spoken having more or less an improvised character about them, are scarcely, it may be argued, fair examples, and it will be said that in great decisive actions, deliberately planned and executed, different features will be revealed. But at battles such as Königgrätz, Gravelotte, or Sedan, some corps, as I have already said, must always be held in reserve, and their artillery will be available for special strokes if desired. Therefore, while for battle *de rencontre*, and on the line of march, it will be advantageous to have batteries divided equally between divisions, such an organization need not hamper a commander when he wishes to use them on certain occasions where it is possible to forecast the course of a battle under his own hand.

I have also, I fear, so far dwelt entirely on one side of the question before us, and my readers may imagine my views are colored with something like partiality. This is far from being the case, for I recognize and respect a vast weight of authority on the other side, and I will now show the reverse of the medal, and endeavor to do justice to those who contend for different views.

First, I will state the opinions of Prince Kraft, F. M. Hohenlohe-Ingelfingen, whom we have reverenced under the name of "Kraft" for some years in this country. He was a man with a unique experience of modern war, and his ideas are based not so much on theoretical deductions as on his own observation in the presence of the enemy. And what does he say in his celebrated "Letters on Artillery"?

"The wish for this change originated entirely and specifically among the artillery. It is very disagreeable for the officer commanding a regiment of divisional artillery to see his regiment at the moment of mobilization divided into two parts, and to have nothing whatever to say to it; while the unity of the regiment, which is so important, is broken up just at the most critical time. But this is the only good reason for the abolition of the Corps Artillery." This motive, as I have said, does not apply to our service. "Now this is really not at all an artillery question. I see that you are astonished at this apparently paradoxical assertion. But nevertheless I am right. If the Corps Artillery be abolished, an army corps will consist of two equal parts—the divisions. Thus the unity of the corps ceases to be a necessity."

As regards this argument, I may note that it need not influence our decision, because in our service we never have fought in corps. We may nominally have done so, and during the Waterloo campaign corps were certainly formed on paper. But nevertheless, the division, because our armies have been small, has hitherto always been our unit, and there seems a tendency amongst us now to revert to it again. Hohenlohe goes on to show

that a corps organization is the best for an army, and calls Napoleon to bear witness for him. In 1806, and again in 1866, a different system, he tells us, was tried in Prussia and found wanting.

But he is prepared to support Corps Artillery on tactical grounds too. "It produces," he writes, "in combination with the divisional artillery, a tremendous effect whenever the general in command may please to use it; and thus prepares the way for the main decisive action. The very existence of a Corps Artillery points out that the effect of artillery should not be dispersed, but should be concentrated on the decisive point." Then he gives a little glimpse of reminiscence, and he describes how during the long winter evenings of the siege of Paris, when the staff of the Guard Corps were enjoying a game of whist and any one played a trump, "See!" said the onlookers, "he is sending his Corps Artillery into action." The employment of those guns had come to be taken as a sign of energetic action. And the young officers at headquarters declared jokingly that the general in command, whenever he received a report which compelled him to mount his horse, used to call for "My boots, and the Corps Artillery!" Jests, like straws, often show the way the wind is setting. Finally he declares that the way to remedy the inconvenience of breaking up the regiment of divisional artillery is to augment the field artillery with a corps, and he says twenty-one batteries are the minimum necessity demands. Since he wrote, the Germans and French have raised the number of their batteries to twenty, and the tendency is to a further increase still.

In England, perhaps, after Hohenlohe, no one is more frequently quoted than Von Schell, and he corroborates what the former says. But he is also, be it noted, the most fervid apostle of the doctrine which teaches us to engage all our guns as early as possible, and no one has more strongly recommended the system of pushing the guns of the rear division forward in the marching columns than has he. It is a curious fact that a German officer, who has very stoutly advocated the abolition of a distinct Corps Artillery, says that he was converted (or perverted perhaps I ought to say) from the more orthodox ideas mainly by the arguments Von Schell has put forward in favor of a bold and early deployment of guns.

Von Schell and Hohenlohe are supported likewise by the authority of Von Boguslawski, who favors a Corps Artillery because it facilitates the handling of the artillery in masses, the only true method of its application. I have seen Meckel also quoted on the same side, as lending his concurrence to what Hohenlohe says. But his opinion really goes against us in England, for he expressly states that when a corps is divided into three divisions a Corps Artillery is no longer a necessity. The commander-in-chief, he adds, may on a special occasion elect to appropriate the artillery of any of the divisions for his particular purposes, and the guns thus set aside would constitute what is practically a Corps Artillery, just as did the batteries of the Imperial Guard in the majority of Napoleon's battles. This is what he says: "An army corps formed of three infantry divisions certainly does not need a Corps Artillery. The artillery of that division, which the general would in every case hold in hand, constitutes, in fact, Corps Artillery. In this case we ought to strengthen each division from the first with

as much artillery as possible, and not unnecessarily increase the labor of issuing orders by adding a Corps Artillery."*

We need not further seek a solution to this question by counting noses on the one side and the other. I have named several distinguished names in support of the existing system, but there are, perhaps, those which carry as much prestige of the opposite opinion. Their views are admirably epitomized in the new volume on field artillery, by General Müller of the German army. Von Scherff, for example, and Von Rohne, and the authors of several anonymous articles in German publications. In England, last year, a very able officer suggested in public, at the United Service Institution, that we should not only abolish Corps Artillery, but that we should cease from permanently organizing even divisional artillery. Our batteries, in his view, had best be all combined together as squadrons are in a cavalry division, and be subdivided amongst the component parts of the corps when required, or utilized as a mass according to the ideas of the general in chief command. I think myself, that that would be a somewhat drastic reform, and would destroy many of the advantages we derive from the intimate connection we hope to see growing up on active service between the different arms of the service, between the guns and the remainder of the division to which they belong. When, however, so many are not afraid to raise their voices against the almost universally existing organization, I think it must be based on foundations less secure than we may have hitherto been led to believe, and there would appear to be at least a *prima facie* case for careful inquiry. There certainly does seem to be cause for suspicion whether with our three divisions in one corps we are on the right track in legislating for a fourth artillery unit on mobilization. Probably, however, no change will be made by any Power until the next great war has been fought out. We shall then see a general re-armament all round, and no doubt many alterations in the constitution of armies will be made. But until we have a war we shall have no new reliable data to guide us, and the prevailing fashion will hold its own.

One innovation, however, would not appear a very rash one, and has had a counterpart in the history of the past. It is somewhat in the nature of a compromise, and peace, with its many councillors, encourages compromise. Many fancy they foresee the future development of field artillery, in high explosives. Now to fire such explosives with safety we want a gun with a low-muzzle velocity, and to get a good effect we need a shell larger than that which our present field-guns fire. We require, in fact, a howitzer. Likewise, if troops ensconce themselves behind artificial cover, and it seems not unlikely that they will avail themselves largely of such protection, at any rate when acting on the defensive, in the future, we may able to reach them by means of high angle fire, when it would be waste of ammunition to cannonade their positions with guns of flat trajectory. We may, in fact, before long feel the necessity for special weapons for special situations and occasions. It would not be wise—it would indeed be in the highest degree rash—to arm all our field artillery with howitzers, at least until we have more to guide us in the way of practical experience. Such pieces would

* "Allegemeine Lehre von der Truppenführung im Kriege," by Colonel Meckel, p. 95.

scarcely be able to take part in the artillery duel as we at present understand it. But some held in reserve until the moment of the infantry assault, might then find their opportunity, and might lend invaluable aid to their side. Is it an unsubstantial dream to imagine that several batteries so armed, and firing heavy projectiles filled with high explosives, might be brought up to turn the scale, as did the weight of the final mass of guns in the old wars? Abroad, almost all the great powers are turning their attention to vertical fire in the field. Russia has taken a definite and decided lead here, and we ourselves have experimented with a new howitzer, though I believe we have as yet not armed any batteries with it. It seems, therefore, not very improbable that future wars may see them used again, and in that case they will form a special unit of reserve artillery under the direction of the general in chief command. In that case we should have a real "Corps" or "Reserve Artillery" once more, which would naturally fall into its place on the battle-field, and whose functions would be clearly defined by reason of the special characteristics inherent in its armament. The remainder of the field-guns proper would be allotted to the divisions, and there would be no longer any confusing or pedantic distinction between things which are practically identical when once they are thrown into the turmoil of the fight.

Thus, I fear, I have been bold enough to pile one heresy on another, and have perhaps left my subject still shrouded in some ambiguity. But an honest doubt is sometimes more valuable than an implicit faith in a well-learnt lesson. Uneasy questionings make us pause to consider why certain rules and systems exist, and we appreciate their meaning the more if we examine closely the foundations on which they rest. I am writing, I trust, in no controversial spirit, and I freely recognize the advantages connected with the all but universally received method of organizing the batteries belonging to a corps.

VON SCHERFF'S COMMENTS ON THE CAVALRY CHARGES AT MARS-LA-TOUR.

TRANSLATED BY FIRST LIEUT. CARL REICHMANN, 9TH U. S. INFANTRY.

GENERAL VON SCHERFF, one of the foremost tacticians of the present time, if not, indeed, the foremost, is engaged in writing a series of works entitled "War Lessons from Historical Examples of Recent Times." In the Second Volume, treating of the battle of Vionville—Mars-la-Tour, he discusses among other things the cavalry charges of that day, and in his comments gives his ideas as to the employment of cavalry in battle, which may not be uninteresting to some of the readers of the JOURNAL.

He says:

"We begin by stating our conviction that smokeless powder will exert no influence over the practicability or impracticability of cavalry action in the battle of the future!

"This new invention has not immaterially impaired cavalry in reconnaissance; but for a charge against infantry and artillery it will hardly make any difference whether the enemy, armed with the breech-loader, uses old or new powder.

"Before the battle the enemy's position is no longer revealed to the reconnoitring patrol by the smoke; but on the other hand, the smoke no longer veils from the superior cavalry leader the hostile movements, as it did formerly.

"That constitutes a certain disadvantage for the higher leading in battle, but is rather an advantage for the employment of cavalry in battle against fire-arms.

"The cases in which cavalry succeeded in surprising infantry, thanks to the smoke made by the latter, have probably been much fewer than those in which the cavalry, thanks to the smoke of the enemy, missed its objective.

"In both charges (of Bredow's brigade and of the 1st Guard Dragoons) in which the cavalry succeeded in riding down hostile infantry, the (always indispensable) surprise of the opponent was possible only on account of the character of the terrain; Bredow's brigade emerged unexpectedly from the depression east of the Tronville copse, the Guard Dragoons suddenly over the ridge 780, at charging distance from the enemy (Hoenig).

"It would seem to us as though, in the discussion of these two charges, sufficient notice had not been taken of the fact that in both instances the cavalry in broad deployed front struck the hostile front, while since then, and frequently even to-day, it has been the rule in the cavalry charge against infantry to carry it out in échelon and as much as possible against the enemy's flank.

"Let us briefly consider how the circumstances lie in the one or the other case.

"With the present infantry tactics a frontal cavalry charge strikes first a coherent single rank, skirmish line, and after breaking through this, finds, in most cases, the supports held together in groups a few hundred metres to the rear; the flank charge of the cavalry strikes first the supporting groups separated by the broad intervals of the infantry (skirmishers on the flank rapidly forming groups, flank supports, flank companies of the main line, etc.)

"In the first case the cavalry—always supposed to appear unexpectedly at a few hundred metres from the infantry—merely receives the independent fire of individual skirmishers whose coherent front masks the fire of the detachments in rear.

"In the second case the cavalry receives the controlled fire not only of the closed detachments struck first, but of the detachments contiguous to the flank attacked, firing through the open intervals of these groups.

"Even as regards numbers, this latter fire will be superior to the former and—however paradoxical it may sound—we are almost inclined to say that a body of infantry advancing in proper formation as regards depth, will, as regards an attack by cavalry, be stronger on its flank, than in front.

"This ratio increases with the increasing front of the infantry, provided the cavalry charge is made with correspondingly increased forces.

A deployed battalion will probably defend itself against the charge of a cavalry regiment equally well to the front and flank ; for a deployed brigade the frontal attack of a cavalry division is more dangerous than a flank attack.

" But only on the supposition that the cavalry do not charge in successive small échelons (squadron front).

" If, instead of in line, Bredow's six squadrons had charged in two regimental échelons (as did du Preuil's cuirassiers) with a front say of two squadrons and if thus three successive squadrons had been thrown on Canrobert's infantry, they would, instead of breaking through all the enemy's successive lines, in all probability have succumbed to the concentric fire of the first skirmish line ; nor would the Dragoon Guards have fared better if they had attacked in échelons, notwithstanding the disorder and lack of steadiness in Grenier's skirmish line.

" Any skirmish line, even when surprised, will when not itself attacked, preserve sufficient coolness to fire obliquely on the hostile squadrons charging in échelons on the neighboring skirmishers. But if every individual skirmisher, as far as his eye can see to the right and left, sees nothing but one continuous line of cavalry coming thundering down upon him, his shots probably would not be immaterially affected by the impression.

" Leaving out of consideration the matter of surprise, deemed more and more indispensable for success to-day when there can be no longer a question of the infantry's unreadiness to fire on account of having its fire elicited prematurely, the line, even in single rank, would appear as a more suitable form of the cavalry charge against infantry, than the échelon formation.

" At any rate the success thus gained, however fleeting in character, may under certain circumstances be of far reaching consequences and, though gained at the cost of great sacrifices, save still greater ones.

" We may speak of death-rides, but the loss of the cavalry may under such circumstances save the troops thus succored from losses three or four times heavier, particularly in prisoners and guns. Whether the batteries of the X. corps would have been able to remain in action until the repulsed infantry had passed behind them, is as doubtful as the question, whether without Bredow's charge the infantry of the 6th Division could have established its new front in time.

" Having once created hesitation and unsteadiness not only in the first, actually pierced line, but also in the lines in rear whose fire is masked, the cavalry in charging has fulfilled the indispensable prerequisite for success on a grand scale against an advancing infantry in the same measure as would be the case in gaining superiority of fire against an enemy in position.

" Here likewise, it will merely be a question of bringing up forces of proper strength, in order to pass at once from the first step to the second.

" Had Bredow's brigade been followed at a short distance by a second or third line, even if formed of individual squadrons with wide intervals ; had the three squadrons of the Guard, perhaps, been likewise followed by the two cuirassier squadrons, the results of both charges against the infantry,

now 'whirled' together, might have been more far reaching, provided, of course, the hostile cavalry on its part was unable to come to the rescue.

"Where therefore the terrain favors surprise on the part of cavalry, the influence of this arm on the final decision will remain sufficiently great to admit of speaking of the independent employment of cavalry in battle.

"As compared with former days, the conditions for the success of cavalry have been modified, but they have not disappeared, and no reason can be assigned why what could be done at Mars-la-Tour should not be repeated in the future, provided the cavalry conform to the conditions.

"Success of cavalry against intact infantry—as always, even in Frederick's time—will, it is true, be obtained in exceptional cases only, and then will not extend beyond a certain limit.

"Against infantry which has just been under the influence of short range fire-fight—be it in advance or retreat—a well-led cavalry charge will all the less be considered impracticable to-day, since such fire-fight produces in the infantry an unnerving to a degree heretofore unknown.

"If even a part of Clerembault's cavalry—for instance, Bruchard's chasseur brigade, and this would not have been impracticable—had crossed the Greyère ravine in broad front, thrown itself on the retreating débris of the 38th Brigade and with it also swept away the three squadrons of the Guard Dragoons, this infantry brigade would hardly have been able to reform into an efficient fighting body by the morning of August 17. * * *

"To solve the tasks falling, in battle, to the lot of large bodies of cavalry requires in the first place a thorough understanding of the infantry combat on the part of the cavalry leader, and also his presence during battle at a spot where he can himself see things 'ripening.'

"The moments are short, as they always have been, when the cavalry charge on a grand scale will carry off the laurels. As compared with former times, the task is rendered more difficult by the necessity of having the cavalry await the approach of that moment at a greater distance in rear.

"If at the proper moment the superior leader has to send to the rear for the cavalry leader, the favorable moment will have passed before this leader has oriented himself.

"Had the cavalry generals, Duke of Mecklenburg and von Rheinbaben, been present with Generals von Alvensleben and von Voigts-Rhetz, the 6th Cavalry Division would, in all probability, not have come too late, and the 5th would have been saved a circuitous route, to which it is due in a large part, that the cavalry combats on the plateau of Ville sur Yron became a series of individual charges, instead of a combined action of the division."

Military Notes.

DATES OF CERTAIN WARS, CAMPAIGNS, EXPEDITIONS, EVENTS, ETC.

1790–1795.	War with Northwest Indians, Miamis, Wyandots, Delawares, Pottawatomies, Shawnees, Chippawas and Ottawas, September 1790, to August, 1795.
1791–1794.	Whiskey Insurrection in Pennsylvania.
1806.	Sabine Expedition, Louisiana.
1811–1813.	War with Northwest Indians, November, 1811, to October, 1813.
1812.	Seminole disturbances, Florida.
1812–1815.	War with Great Britain, June 18, 1812, to February 17, 1815.
1813–1814.	Creek Indian War, Alabama.
1817–1818.	Seminole or Florida War, November 20, 1817, to October 31, 1818.
1823.	Campaign against Blackfeet and Arickaree Indians, Upper Missouri River.
1827.	La Fevre Indian War, or Winnebago Expedition, Wisconsin (no fighting). June to September, 1827.
1832.	Black Hawk War, April 26 to September 21, 1832.
1835–1842.	Seminole or Florida War, December 28, 1835, to August 14, 1842.
1836–1837.	Creek disturbances in Alabama, May 5, 1836, to September 30, 1837.
1836–1837.	Southwestern Frontier (Sabine) disturbances Louisiana and Arkansas (no fighting), April, 1836, to June, 1837.
1836–1839.	Cherokee disturbances and removal.
1838–1839.	New York, Aroostook and Canada (Patriot War) Frontier disturbances (no fighting).
1846–1848.	Mexican War, April 24, 1846, to May 30, 1848.
1846–1847.	New Mexico Expedition, June 30, 1846, to February 13, 1848.
1848.	Cayuse War, Oregon, Oregon Volunteers.
1849–1861.	Navajo troubles, New Mexico.
1849–1861.	Continuous disturbances with Comanches, Cheyenne, Lipan, and Kickapoo Indians in Texas.
1850.	Pitt River Expedition, California, April 28, to September 13, 1850.
1851–1852.	Yuma Expedition, California, December, 1851, to April, 1852.
1851–1856.	Rogue River, Yakima, and Klikitat Indian Wars in Oregon and Washington.
1855.	Winnas Expedition against Snake Indians, Oregon, May 24 to September 8, 1855.

1855. Sioux Expedition, Nebraska Territory, June to October, 1855.
1855. Yakima Expedition, Washington Territory, October 11 to November 24, 1855.
1855–1856. Cheyenne and Arapahoe troubles.
1855–1857. Seminole or Florida War, December, 1855, to September, 1857.
1857. Gila Expedition, New Mexico, April 16, to September 16, 1857.
1857–1858. Utah Expedition.
1857–1858. Kansas Border troubles.
1858. Expedition against Northern Indians, Washington Territory, July 17 to October 17, 1858.
1858. Puget Sound Expedition, Washington Territory, August 10 to September 23, 1858.
1858. Spokane, Cœur D'Alene and Paloos Indian troubles in Washington Territory.
1858. Navajo Expedition, New Mexico, September 9 to December 25, 1858.
1858–1859. Wichita Expedition, Indian Territory, September 11, 1858, to December, 1859.
1859. Colorado River Expedition, California, February 11 to April 28, 1859.
1859. Pecos Expedition, Texas, April 16 to August 17, 1859.
1859. Antelope Hills Expedition, Texas, June 10 to September 23, 1859.
1859. Bear River Expedition, Utah, June 12 to October 18, 1859.
1859–1860. Cortina troubles on Texas and Mexican border.
1860. Kiowa and Comanche Expedition, Indian Territory, May 8 to October 11, 1860.
1860. Carson Valley Expedition, Utah, May 14 to July 15, 1860.
1860–1861. Navajo Expedition, New Mexico, September 12, 1860, to February 24, 1861.
1861–1890. Apache Indian War and troubles in Arizona and New Mexico.
1861–1866. War of the Rebellion, April 19, 1861, to August 20, 1866. Actual hostilities, however, commenced upon the firing on Fort Sumter, April 12, 1861, and ceased by the surrender of the Confederate forces under General Kirby Smith, May 26, 1865.
1862–1867. Sioux Indian War in Minnesota and Dakota.
1863–1869. War against the Cheyennes, Arapahoes, Kiowas and Comanche Indians in Kansas, Nebraska, Colorado, and Indian Territory.
1865–1868. Indian War in Southern Oregon and Idaho, and Northern California and Nevada.
1865–1866. Fenian Raid, New York and Canada Border disturbances.
1867–1881. Campaign against Lipan, Kiowa, Kickapoo and Comanche Indians and Mexican Border disturbances.
1868–1869. Canadian River Expedition, New Mexico, November 5, 1868, to February 13, 1869.
1871. Yellowstone Expedition, August 28 to October 25, 1871.

1872–1873.	Modoc Campaign, November, 1872, to June, 1873.
1873.	Yellowstone Expedition, Dakota, June 4 to October 4, 1873.
1874–1875.	Campaign against Kiowas, Cheyennes, and Comanche Indians, in Indian Territory, August 1, 1874, to February 16, 1875.
1874.	Sioux Expedition, Wyoming and Nebraska, February 13 to August 19, 1874.
1874.	Black Hills Expedition, Dakota, June 20 to August 30, 1874.
1874.	Big Horn Expedition, Wyoming, August 13 to October 10, 1874.
1875.	Expedition against Indians in Eastern Nevada, September 7 to 27, 1875.
1876.	Powder River Expedition, Wyoming, November 1 to December 31, 1876.
1876–1877.	Big Horn and Yellowstone Expeditions, Wyoming and Montana, February 17, 1876, to June 13, 1877.
1876–1879.	War with Northern Cheyenne and Sioux Indians in Indian Territory, Kansas, Wyoming, Dakota, Nebraska, and Montana.
1877.	Labor strikes in Pennsylvania and Maryland, July to October, 1877.
1877.	Nez Percez Campaign, June to October, 1877.
1878.	Bannock Campaign, May to September, 1878.
1878.	Piute Indian troubles, in Nevada and Idaho.
1878.	Ute Expedition, Colorado, April 3 to September 9, 1878.
1879–1894.	Disturbances of settlers in Indian and Oklahoma Territories, "Oklahoma Boomers," and the Cherokee strip disturbances.
1879–1880.	Ute Indian Campaign in Colorado and Utah, September 21, 1879, to November 8, 1880.
1885.	Chinese Miner and Labor troubles in Wyoming, September and October, 1885.
1890–1891.	Sioux Indian disturbances in South Dakota, November, 1890, to January, 1891.
1891–1893.	Garcia troubles, Texas and Mexican Border disturbances.
1892.	Miner disturbances in Idaho, July to November, 1892.
1894.	"Industrial Army," "Commonwealers," "Coxeyites," and labor disturbances.
1894.	Railroad, Pullman and Labor strikes extending from Illinois to Pacific Coast, June to August, 1894.

MAXIM SHOULDER-GUN.

"On the occasion of Mr. Maxim's experiments at Erith with bullet-proof plates, an opportunity was afforded of examining a new adaptation of his machine gun. This proved to be a weapon weighing only 20 pounds,—which may be reduced to 17 pounds,—and capable of firing English service .303 cartridges at the rate of about 620 per minute. The action differs but slightly from that of the ordinary Maxim gun. The outside spring-box is not employed, while the outside handle is considerably modified, and the feed-box is brought so close to the side of the gun as to make

it very compact and light. The water-jacket is replaced by a perforated steel or aluminum tube, which prevents the heated barrel from touching anything. It has been found that when 100 rounds are fired at the highest possible speed with one pull of the trigger, a temperature of 500° F. is reached, but it is thought that 250 rounds could be fired continuously without dangerously heating the barrel. The chief peculiarity of the gun is, however, the fact that it is not intended to be fired from a carriage, but from the ground, either by supporting it on the cartridge-blocks or by resting the fore end on a prop, the cartridge-belt being placed on the ground. A shoulder-piece is provided, and the weapon is pressed to the shoulder like the stock of a rifle, the slight pulsations when firing following each other so rapidly as to give a constant but gentle, push. The ammunition is furnished in boxes of 50, as well as in those of 100, such as were used in the Matabele war with the ordinary Maxim gun."—*Arms and Explosives.*

COMPRESSED OATS.

Experiments made at the Central Remount Depot at Berne, Switzerland, with compressed oats, seem to have given good results. The Allgemeine Schweizerische Militaer Zeitung says: "In this form oats has the advantage of better keeping quality, takes up less space and may be pressed in uniform rations of any size, greatly facilitating distribution."—*Militär Wochenblatt. C. R.*

SWISS AMMUNITION WAGON.

An infantry ammunition wagon for the battalions as well as for the ammunition park has been adopted, the two horse wagon consisting of limber and caisson. The ammunition is carried in sacks.—*Militär Wochenblatt. C. R.*

THE GROUSILLIERS RANGE FINDER, GERMANY.

The theory of the instrument is founded on the perception of distance due to binocular vision. Preferably a telestereoscope is used, so that the stereoscopic effect of double vision may be exaggerated. The two views as received on the object glasses at either end of the instrument are focussed on slides in front of the eye-pieces. On these slides are marked two stereoscopic views of objects—say of a series of scale graduations, so placed that when viewed simultaneously they appear to reach away to a distance, and they are numbered for the distances. This scale is thus projected into and appears to become part of the view, and it is possible, by moving the scale over the object whose distance has to be found, to determine the graduation on the scale, which appears to be stereoscopically at the same distance as the object, and thus directly read off such distance. Modified forms of the apparatus are described. Thus a single object may be marked on each of the slides. One slide is fixed and the other is capable of fine adjustment laterally. Thus, by displacing one object more or less with regard to the other, the stereoscopic effect will be that such object will appear to move nearer or further away to certain known distances. By comparing with the distant object, the latter's distance may be found.—*United Service Gazette.*

SUMMARY OF AVERAGE RESULTS WITH .303-INCH LEE-METFORD, .256-INCH MANNLICHER, AND .45-INCH M. H. RIFLES.

Rifle.	Range in yards.	Angle of departure.	Drop of 1 in.	Calculated remaining velocity.[1]	Time of flight.		Thickness of materials. Proof at a given range.													Remarks.
					Calculated.[1]	Observed.	Hard steel.	Mild steel.	Oak.	Elm.	Teak.	Fir.	No. of ¾-in. fir boards.	Sand.	Clay.	Loam.	Flint shingle between ¾-in. boards	Sand between ¾-in. boards.	Loam between ¾-in. boards.	
		° ′		f.s.	secs.	secs.	ins.	ins.	ins.	ins.	ins.	ins.		ins.	ins.	ins.	ins.	ins.	ins.	
0.303-inch Lee-Metford. Muzzle velocity, 1,975 f.s.	3	—	—	—	—	—	—	—	27[2]	33	36	48	—	20	42[3]	28	3	18	—	A thickness of 20 inches of compressed cotton will just stop the Lee-Metford bullet at short ranges. The penetration diminishes rapidly with increased range.
	25	—	—	—	—	—	.20	.44	—	32	28	45	—	—	—	—	—	—	—	
	100	—	—	1,768	0.159	—	.17	.375	21	24	24	40	—	16	42[3]	24	3	18	22	
	500	—	—	1,079	1.044	—	.1	—	13	13	14	24	—	15	40	21	3	15	18	
	1,000	1 32	22.55	787	2.699	2.5	—	—	6	9	7	16	14	21	40	18	3	15	16	
	1,500	3 16	10.8	602	4.887	4.5	—	—	6	6	5	10	9	19	38	18	—	—	—	
	2,000	5 0	6.0	458	7.759	6.65	—	—	3	4	4	8	5	16	36	15	—	—	—	
	2,500	8 25	3.14	351	11.516	10.125	—	—	2	2	3	4	4	15	30	14	—	—	—	
	3,000	14 15	1.39	271	16.374	15.095	—	—	2	2	2	3	4	12	24	12	—	—	—	
	3,500	26 0	0.699	209	22.706	24.04	—	—	2	2	2	3	4	12	15	10	—	—	—	
0.256-inch Mannlicher. Muzzle velocity, 2,285 f.s.	3	—	—	—	—	—	—	—	33[2]	42	40	60	—	12	40[3]	14	3	12[4]	14[4]	A thickness of 18 inches of compressed cotton is amply sufficient to stop the Mannlicher bullets, which all break up at short range.
	25	—	—	—	—	—	.25	.44	—	—	—	—	—	—	—	—	—	—	—	
	100	—	—	2,114	0.133	—	.2	.375	28	32	30	45	—	12	40[3]	14	3	12[4]	14[4]	
	500	0 42	—	1,297	0.863	—	.13	—	17	18	14	27	—	15	—	24	3	15	20	
	1,000	1 5	27.1	871	2.328	2.2	—	—	6	8	7	18	15	15	—	15	2	15	—	
	1,500	2 55	10.63	671	4.299	3.8	—	—	4	3	4	10	8	12	—	12	—	—	—	
	2,000	—	5.45	517	6.863	6.65	—	—	3	3	3	8	5	12	—	12	—	—	—	
	2,500	9 15	2.4	399	10.166	11.15	—	—	2	2	2	4	3	12	12	10	—	—	—	
	3,000	15 30	—	311	14.410	15.56	—	—	—	—	—	—	—	—	—	—	—	—	—	
0.45-in. M.H. Muzzle velocity, 1,300 f.s.	25	—	—	—	—	—	—	—	5[5]	5[5]	5[5]	13[5]	28[5]	17	12[5]	16	—	—	—	These results are taken from the experiments made in 1879-80, with the exception of those marked [5], which were obtained in 1894. The Martini-Henry bullet is just stopped at 50 yards by 20 inches of compressed cotton.
	1,000	2 49	13.8	—	—	3.31	—	.125	—	—	—	—	11	12	—	12	—	—	—	
	1,500	5 15	6.87	—	—	8.65	—	—	—	—	—	—	9	12	—	12	—	—	—	
	2,000	9 7	3.56	—	—	8.50	—	—	—	—	—	—	7	12	—	12	—	—	—	
	2,500	14 25	1.89	—	—	12.55	—	—	—	—	—	—	4	9	—	9	—	—	—	
	3,000	25 20	0.69	—	—	19.65	—	—	—	—	—	—	4	9	—	—	—	—	—	

[1] Muzzle velocities used in calculations :—Lee Metford, 2,000 f.s.; Mannlicher, 2,400 f.s.

[2] The same oak baulks were used in this case.

[3] This applies to moist tenacious clay. If the latter be soft and wet, a greater thickness will be required.

[4] The bullets break up at the short ranges, hence the greatest penetration into sand and loam is obtained at about 500 yards.

[5] The clay in this case was very hard and dry, and a greater thickness of moist clay would be required.

N B.— The calculated remaining velocities given in the table are probably too low, because the penetrations obtained into loam at 3500 yds would hardly have been attainable with such low remaining velocities. Probably, as is found with the Martini-Henry, the remaining velocity increases after a certain range, owing to the gain from gravity being greater than the loss from air friction. It may also be noted that up to 3000 yds with the Lee-Metford, and up to 2000 yds with the Mannlicher, the observed times of flight are less than the calculated ones. These remaining velocities and times of flight were calculated from Bashforth's tables, but no coefficient of reduction was used.

NEW WESSON REVOLVER.

Mr. D. B. Wesson has recently patented a solid-frame, side-swing revolver, somewhat resembling in appearance the present army and navy Colt. Its interesting features are the methods of locking the trigger and cylinder. The cylinder is carried on the usual yoke, and swings out to the left about an axis formed by the pin constituting the lower arm of the yoke. The trigger has its pivot on the rear end of this pin, and, when the cylinder is turned out, a partial sleeve, which does not extend all the way around the pin, is forced to the rear and locks the trigger firmly. The cylinder is locked and held in place, when in position for firing, by its own pivot, which is a sliding pin, the rear end of which snaps into a recess or socket when the cylinder is pressed back into the frame, and it is kept up to its work by a surrounding spiral spring. The cylinder is locked from turning by a pointed stud on a lever which is pivoted at its forward end and lays along the top of the revolver frame over the cylinder space, the stud extending through the frame to engage in the stud recesses of the cylinder. When the hammer moves back the rear end of the lever is lifted by a projection on the back of the former, thus drawing the stud out of the recess in the cylinder and allowing it to revolve. When the projection on the hammer releases the lever it springs down again and locks the cylinder in its new position.

THE TACTICS OF THE COREAN WAR.

Vice-Admiral P. H. Colomb lectured before the East of Scotland Tactical Society at Edinburgh, on Wednesday night upon "The Strategy and Tactics of the Corean War." The lecturer said the war in the East was between an island and a continent, and therefore it narrowly concerned us to watch it, because any war we entered into would probably be of the same general character. The peculiarity of this war was that it involved all the most recent appliances of naval and military warfare. In neither service on either side, he thought, was there wanting anything of the most modern character, either in the training of the personnel or the material. Now, naval officers for some years had been looking back on naval history, and they had been discovering, as they thought, that the laws of naval warfare were every whit as imperative as those of land warfare, and practically all naval wars had been carried to success on definite rules, and had been lost upon the transgression of those rules. The value of the Corean war was the opportunity it gave to look into the question whether it confirmed old history, and whether the war had been carried on according to the principles which had established themselves in naval and military war for generations before. The first of the general principles of naval war accepted among them was that there could not be an indifferent or a neutral sea; secondly, this being so, the command of the sea would be claimed and obtained by one side or the other, generally after a battle, but not necessarily after any battle; thirdly, territorial attack—that is of countries oversea—would not begin until after the command of the sea had been obtained. Fourthly, steam made superiority at sea much more conclusive than in days of sail. Fifthly, steam would greatly favor attacks upon territory; and, lastly, steamships would do

as sailing ships had always done—viz., take a very subordinate share in attack on territory, ports, fortifications, and so on. After giving a short *résumé* of the preliminary portion of the war, the lecturer observed that very little action had given the Japanese a command of the waters which the Chinese were not, or thought they were not, in a position to challenge. There they had the old thing reproduced with all the modern appliance so far. Coming to the land operations in Corea, there was a close parallel to Wellington's operations in the Peninsula, and in this connection he pointed to that part of the advance of troops to the north ending in the battle of Ping Yang, which resembled Wellington's movements ending in the battle of Vittoria. The Japanese had to follow up the Chinese troops, and the latter felt this a tremendous embarrassment from being able to throw troops into Corea, only over a long land route. Then came the battle of the Yalu, and the Chinese were thoroughly defeated, the battle tactically being lost by the formation taken up by the Chinese. The Chinese fleet being placed in a position where they could no longer contend with hopes of success for the command of the sea, they were drawn back into their ports, leaving the sea free to the Japanese. The results of the Yalu battle were the same as that of the battle of the Nile. The Chinese, he continued, had no business to send a great fleet on a secondary expedition. If competent to contend for the command of the sea it might have been used for that and no other; if not competent it ought to have been kept intact to make it more difficult for the Japanese to follow up with attack upon territory. The Japanese began to blockade the Chinese ports, and especially watch Port Arthur and Wei-Hai-Wei. They were preparing for the next step, which was the territorial attack upon Port Arthur. Here again they found a parallel with Wellington's expedition in Spain. All the time the attack on the territory was going on the Japanese were watching Port Arthur and the Chinese fleet to see that the latter did not interfere with the siege. It was a necessary part of the attack that the Japanese fleet should be there strong enough to mask an opposing force of Chinese ships; and the same thing happened over again at Wei-Hai-Wei. In conclusion, he said the grand point was to see whether the lessons to be drawn from the fighting in the Far East corresponded with the lessons which we might draw from any page of previous history; and he thought we should be all agreed that, notwithstanding the collapse on the part of the Chinese, for it was a wonderful collapse, we might be strengthened in the belief that we might go to the past for lessons in the future; and we could not be very far wrong if we based all our operations, and if we arranged the joint works, of the army and navy of this country, on what had gone before.—*United Service Gazette.*

CLUB-SWINGING.

At the Army Athletic Club, Aldershot, on Monday, the club-swinging record was broken by Sergeant A. Battersby, of the 2d battalion Norfolk Regiment, who swung clubs weighing 2 lbs. each for twelve hours without stopping. He began his remarkable performance at four minutes past seven, making on an average sixty circles a minute, and kept that rate till the same time in the evening, thereby making altogether 43,200 evolutions. During his task he was fed with Bovril and a hard-boiled egg, and smoked

an occasional cigarette. Hundreds of spectators came to visit him and cheer him on his difficult task throughout the day, and at the conclusion of his performance a perfect ovation was given him, the band of his regiment playing him to his barracks amidst tremendous cheering.—*United Service Gazette.*

FRENCH FIELD-BREAD.

The French "field bread" which has been adopted by the army administration to replace hardtack, is prepared in compressed form, but remains soft and well suited to be eaten with the soldier's favorite dish, the soup. Its keeping qualities are as good as those of hardtack, without having the latter's defects, which consists in its hardness and lack of palatability, and aptness to produce repugnance and bowel troubles. The *Revue Militaire* thinks that the disappearance of hardtack will be felt most by the horses, since they had been in the habit of consuming the greater part of the hardtack issued to mounted troops. The adoption of this bread closes a long series of experiments.—*Militär Wochenblatt. C. R.*

HEAVY GUNS IN FORTRESS DEFENSE.

In the September number of the *Proceedings* of the Royal Artillery Institution Major Hickman, in a very able and interesting article on the "Attack of a Modern Land Fortress," disclaims at the outset any intention of approaching the subject in a dogmatic spirit. It is with the same disclaimer that Captain G. Tyacke, R. A., in the last issue of the *Proceedings*, prefaces the following remarks, which bear on one question in Major Hickman's article—viz., "Why not eliminate heavy guns in permanent emplacements altogether from the defense?"

To anyone approaching a subject like this, writes Captain Tyacke, pros and cons suggest themselves with equal readiness. Let us imagine, he says, a discussion between, say, H. and T.

T.—"You say that guns in forts, unprotected with armor, must be quickly disabled, and that they are in no case able to obtain the same amount of cover as howitzers. Would not guns on disappearing carriages with top shields be even more under cover, except at the moment of firing, than howitzers?"

H.—"Your shield could be penetrated by high-angle fire, and the gun would betray its position the first time it rose to fire, and once that was noted its disablement by vertical fire would be easy."

T.—"At Lydd in 1887, thirty rounds from an 8-inch M. L. howitzer were fired at a 6-inch H. P. emplacement with all the advantages of communication with the range party. The howitzer is said to have shot well, but only one hit was obtained on the shield and that glanced off harmlessly.

"You lay some stress on high explosive shells, but it has been shown that when armor is struck, unless the shell penetrates, the effect of detonation on the armor is almost *nil.*

"When using vertical fire the velocity of the falling projectile is low, and the shell is not usually adapted to armor piercing, so that it would appear only necessary to slightly increase the strength of the overhead shield to

make it impervious to high-angle fire. Shields of the present thickness 'Harveyed' might be sufficient.

"The opening through which the gun rises could be automatically closed if desired as the gun descends. A 9-inch shell will not penetrate a 4½-inch steel plate with the velocity due to falling from a height of about 7000 feet, and this is probably a more severe trial than is to be expected from any siege piece."

H.—"Well, supposing that your gun has the good luck not to be disabled, what can it do that a howitzer could not do as well?"

T.—"It will secure me the advantages to be got from high velocity, long range, and a powerful shrapnel shell."

The permanent nature of their mounting should enable the heavy guns to take part in the fight up to the extremity of their range, and to support the light artillery in the skirmishes before investment is completed, and also in any sorties or counter-attacks made by the defense.

Central pivot mountings lend themselves readily to a system of land position-finding, since they have an all-round arc of fire, and the gun can be laid from under cover.

A position-finding system, originally tried for coast batteries, making use of maps ruled in numbered squares, could be modified to suit land fronts. No cross bearings would be needed, as the features of the landscape would guide the observers, who might be pushed forward to advanced positions in the early stages of the attack, and stationed in balloons later on.

The numbers of the squares, with the range and bearing of each, would be posted up near the gun and fire could be directed on any square specified by the observation parties. Specially important points, such as cross-roads, lines of approach, or probable positions for batteries, etc., would be more minutely sub-divided than others.

Very useful observations were made at Lydd in 1887 from captive balloons, and photographs of the camp were automatically taken from a free balloon with no one in it. It appears likely that free balloons will become more manageable in the future, and there are reasons why it would be far more difficult to hit them than captive ones.

One advantage in high velocity is in the arrival of the shell before warning has been given by the report of the piece, It was found at Plevna that, for this reason, high velocity guns were more dangerous and demoralizing to working parties than pieces whose projectiles travelled slower than sound.

With regard to howitzers and high explosives, I have seen the results of firing with delay fuses at casemates, and very destructive they are, but the shells that missed and buried themselves in the ground before bursting were quite wasted. I have also seen a 6-inch lyddite shell act wonderfully as a man-killing projectile—over a restricted area—when it burst absolutely on the surface, without penetrating the earth. But even if the burst were not smothered, the upward direction of most of the fragments militates against their usefulness, and it will be granted that time shrapnel from high velocity guns has a more widespread man-killing effect than any percussion shell.—*United Service Gazette.*

Reviews and Exchanges.

Attack of Fortified Places.*

A VERY neat and comprehensive little book is the recent volume by Prof. Mercur, on the "Attack of Fortified Places." It would seem that the title might very properly have included "defense" as well as "attack," as there is an entire chapter and more devoted to that branch of the subject. There is also a chapter devoted to blasting and demolitions.

Owing to the almost entire absence of such recent examples and precedents as civil engineers have at their disposal, the writer of text books on Military Engineering has very little opportunity for drawing conclusions and formulating rules, while the constant changes in the means of attack and defense are continually rendering old methods obsolete without substituting new ones of tried and proven efficiency. This of course leaves the matter in a more or less uncertain status with considerable latitude for personal opinions and preferences. It is probable that the engineer will, in future wars, have more latitude for the exercise of his own ingenuity and judgment than did those of the late rebellion, which was a record breaker in upsetting former rules and precedents.

How far the principles laid down in Prof. Mercur's book will be followed no one can now foretell, but whether literally followed or not they will be very useful in turning attention in the right direction, and the engineer will find in them valuable matter for a basis on which to form his plans of operations.

In his choice of materials and substitution of new methods and appliances for old, the author appears to have exercised good judgment, though his dismissal of the reliable old Sap Roller and some other things without so much as a definition, was rather unceremonious.

Perhaps however in the fullness of time the Sap Roller may come back to us in a modified form, as did the old Chandelier, which after an absence of a century comes back as a Trench-Shield, a plate of metal being substituted for the fascines.

In fact it may be questioned whether the Sap Roller is any more obsolete than many other appliances and methods that are still retained.

If the publisher will insist on using folding plates he should at least number them on the outside of each fold, so as to obviate the necessity for unfolding an unknown number of them before getting the one sought. W. R. K.

Napoleon Bonaparte's First Campaign.†

Under the above title Lieutenant Sargent contributes a pleasing addition to the voluminous Napoleonic literature of the day. Military histories and treatises on the art

* *Attack of Fortified Places.* By James Mercur, Professor of Civil and Military Engineering at the United States Military Academy, West Point, N. Y. John Wiley & Sons, New York, 1894.

† *Napoleon Bonaparte's First Campaign.* With Comments by Herbert H. Sargent, First Lieutenant 2d Cavalry, U. S. Army. A. C. McClurg & Company. 1895.

of war are replete with illustrations and deductions taken from this short, decisive and brilliant campaign. There is, of course, no new historical matter in the book, nor will the military student learn any new lessons in the art of war. He may, however, find it a very pleasant and profitable way of renewing acquaintance with old friends, and the tyro in military science may study it carefully with great advantage. It is systematically arranged and sufficiently detailed without verbosity.

It is largely devoted to the strategy of the campaign, its most important feature, and will be of great assistance to those who desire to get the gist of it without reading through a great mass of historical details as furnished by the non military historian.

A comprehensive and well arranged index is a good feature. In attempting to define *good generalship* the author has undertaken a task which has proved too much for many prominent military writers. We don't quite like the stress put upon *the immutable principles of war.* In fact, Napoleon, Frederick, Grant and Sherman have taught us that there are no *immutable* principles of war.

One of Napoleon's many wonderful gifts was that of being able to foresee what his enemy would do under certain circumstances and act accordingly without much regard for the so-called principles of war. Strategy has neither won nor lost many great battles. It is secondary to energy, morale and courage.

Frederick could afford to be inferior to his enemy in strategy for he was vastly superior in tactics, discipline, training and celerity. The test of good generalship is success. He says: "*Genius in the art of war consists in knowing when to scatter your forces and when to unite them.*" Such knowledge is of course very important, but I would hardly accept it as a definition for "genius in the art of war." He says the "principles of strategy have never undergone any change." I think it is quite difficult to define the limits of strategy, as it is by no means an exact science. As an art it is constantly changing. If Napoleon, Cæsar and Hannibal have had any fireside conversations on the subject, I have no doubt but the great emperor has given the ancient worthies many pointers, "not dreamed of in their philosophy."

Lieutenant Sargent has earnest and decided views, and draws his conclusions with pleasing directness. Some of his views are open to discussion, and as intelligent discussion is a good educator, the book should receive a warm welcome. The volume is of handy size and the typography is good. Tactical maps of the most important battles would add to its interest for professional soldiers. J. S. P.

The Manufacture of Heavy Ordnance and Armor.*

In May, 1894, Captain Jaques gave one of his interesting lectures to the members of the Naval Institute at Annapolis. This lecture published originally in No. 71 of the Proceedings of the Institute, is now issued separately in pamphlet form. The lecture covers in a concise popular way the field of ordnance and armor as it appears to-day, with some special attention given to the new powders, "wire-wrapped" guns and hard-faced armor.

Of the new powders Captain Jaques says: "My present conclusions are that the powder question is still a trying one. With the cordite class better ballistics are obtained, and much faith is now placed in its stability,—but the destruction it causes to the chamber and commencement of the rifling almost suggests a return to smooth bores.

"If we do not change the propelling agent I believe we must look to the amount of work put upon the metal and its treatment, rather than to the chemistry, alone, of

* *The Manufacture of Heavy Ordnance and Armor.* Their Ballistics and Resistance. By W. H Jaques, Ordnance Engineer. Reprinted from the Proceedings of the United States Naval Institute. Volume XX., No. 3. Whole No 71.

the metal, for the determining agents that will prevent or reduce the amount of erosion; and that the solution of the problem will be found in the mechanical field."

In regard to wire-wound guns the author thinks that "there is such abundant evidence now in favor of each [the built-up and wire-wound] that the choice may be governed, like a lady's toilet, by a caprice of authority." "Between the best examples of the two types," he writes, "there appears to be so little difference that a mistake could hardly be made by the selection of either." Brief descriptions are given of the Woodbridge, Crozier and Brown designs.

Captain Jaques doubts, with many others, whether it pays to case-harden the faces of very thick plates. He says, very truly, "13-inch, 12-inch and even 10-inch armor-piercing shells, attacking at service energies, have cracked them; and although increasing the number of bolts may keep the pieces in position, we find ourselves back again to the old discussion as to which is least objectionable, considerable penetration or cracks. No matter what further tests may decide, one thing is certain, the calibres of guns must be increased, not diminished."

He finally renews his plea for the use of velocity-screens in rear of plates in testing armor. It does, indeed, seem passing strange that this method of determining the strength of a plate by finding the amount of projectile energy expended in complete perforation, has not come into general use. In no other way can a definite idea of a plate's strength be ascertained; and it is believed sooner or later test plates will be subjected to a *perforating attack* and the strength of the plate expressed in the number of foot-tons of energy absorbed per unit of weight of the metal about the shot hole which experienced molecular disturbance by the passage of the projectile.

The lecture was illustrated at Annapolis by 250 excellent lantern views.

E. M. W.

The Snake Ceremonials at Walpi.*

This latest production of Dr. Fewkes is superbly gotten up, with every indication of a desire to be exact and comprehensive.

There is a map of the Tusayan or Moqui country, a bibliography of works consulted, and nearly forty illustrations, three of which are in colors, and others are photographic. The frontispiece is an illuminated and graphic representation of the Snake Dance seen near the Sacred Rock of Walpi.

Were Dr. Fewkes to attempt nothing further in the line of anthropological research, he might safely let this volume be a monument to his energy, intelligence, and skill in presenting to students a combination of results already known, with the observations he was himself enabled to make and to so perfectly record.

He has made a noticeable contribution to the history of primitive religion.

What was the earliest recorded manifestation of the religious impulse in human nature, will probably never be known. Lenormant tells us that the prayers of the Accadians who occupied Mesopotamia before the coming of the Chaldæans were directed against necromancy and witchcraft.

Sun Worship and Star Worship have had their advocates, and so have Phallic Worship and Ophiolatry. The last undoubtedly had an early origin in all countries where members of the Ophidian family were to be found. Sometimes it appears to have existed as an independent cultus, generally it has been more or less intimately associated with the veneration paid to the Reciprocal Natural Energies.

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* *The Snake Ceremonials at Walpi.* By J. Walter Fewkes, assisted by A M. Stephen and J G. Owens. Hemenway Southwestern Archæological Expedition, in Volume IV., Journal of American Ethnology and Archæology. Boston: Houghton, Mifflin & Co., The Riverside Press, Cambridge, 1894. 126 pp., royal 8vo, large type.

Ferguson, in his "Tree and Serpent Worship," has demonstrated its early existence in India: the oldest ruins bear the trace of the Serpent symbol.

Among the Celtic Druids it held sway: possibly it was Snake Worship rather than the material snake which St. Patrick drove out of Ireland. All over Celtic or Celto-Iberian France or Spain, the name of St. Michael's Mount, Cape, or Hill, recalls the early struggle between the Archangel of Light and the Arch Enemy of Mankind represented by tradition as condemned to crawl upon the earth.

Until the reign of King Hezekiah the Hebrews were open and undisguised Snake Worshippers.

At present writings, Ophiolatry is restricted to three grand ceremonial foci: Whydah in Western Africa, where it exists in conjunction with Human Sacrifices; Nagpore in India, and the Moqui villages in the United States.

That it exists in other places, either in secret rites or obscured by intermixture of extraneous ceremonial, as in the alleged practices of the Haytian Voodoo and others, has been intimated, and may be accepted as fact; but whether in pure or adulterated form, Ophiolatry has given rise to more mystic explanation, more vague description, more wild, irrational comment than any other phase of religious thought.

The descriptions of the ancients are generally neither comprehensive nor intelligible, and those of the majority of moderns have been nearly always a rehash of citations from previous writers, seasoned with a liberal sprinkling of the wild and improbable.

About the only piece of ritual that has come down to us, delineated so that it can be half understood, is that of the Ophites, a sect of the Gnostics, living near Alexandria, Egypt, who it is related (A. D. 150–200), allowed small sacred snakes to glide over the Eucharistic elements before administering the Communion. In more modern times the English architect and scholar, Ferguson, in his "Tree and Serpent Worship," made an excellent attempt to restore order out of chaos, and write clearly upon the subject as he had studied it in the ruined temples of India. A small book on the manners and customs of the Negroes of Whydah was published by a Roman Catholic missionary in the early seventies, in which there was full reference to the horrible prevalence of Human Sacrifice, with pictures of the victims; but the remarks upon the Snake Worship existing there from time immemorial were jejune and unsatisfactory.

It has been within our own territorial boundaries that the best work in this direction has been done. We have Indian villages obstinately conservative of old heathen usages, a climate which enlivens and exhilarates instead of enervating and destroying as does the deadly miasma of Africa, lines of rapid communication penetrating almost within stone's throw of the shrines where these rites obtain, and a military force within accessible distance should the Indians assume an attitude of menace towards observers.

Small wonder, then, that as the years roll by, greater and greater numbers of scholars should be attracted to the Moqui villages, each profiting by the experience of his predecessors, each in turn serving as a stepping-stone to new discoveries.

Resident observers like T. Keam and A. M. Stephen have taken the records of the observations of these scholars, and compared and corrected them by the additional facts disclosed by increasing familiarity with the Moqui dialect, ideas, and customs, so that with each recurrence of the dance the arcanum of Indian superstition has been assailed with renewed energy and enthusiasm, and new secrets wrested from it.

Scholars from over the sea have not been slow to take advantage of this favorable

condition of affairs, and intelligent newspaper correspondents have gone in by dozens, each adding columns of observation and comments which have not infrequently, however, been marred by sensationalism.

Painters of repute have made sketches to serve as a basis for future work of a more permanent character. Among those who have thus put before the literary world the manners and environment of the Moquis, may be mentioned Harmar, Moran, Julian Scott, and Lundgren. All the resources of modern invention have been called into requisition, and the final result is this beautiful and exact piece of work which Dr. Fewkes now lays before us.

The Moqui medicine-man, with his sacred "estufas," his sand altars, his regalia and his loathsome serpents, has been photographed, painted in colors, drawn to a scale, his canticles have been pirated by the waxen cylinder of the phonograph, and he and his sacred ceremonials, which, less than fifteen years ago, were not known as far east as Albuquerque, are to-day the best described of any specimen of savage manhood or any survival of aboriginal religion on the surface of the globe.

When I took the manuscript of my own "Snake Dance of the Moquis" to London, in 1883, one of the great difficulties encountered was, how I, a stranger in a strange land, could get people to give credit to the existence of such rites in the heart of Christian America. Now there is scarce a school boy or girl in all our wide domain, or in Canada, or Mexico, who has not a good general idea of the subject.

The first white men to see the Snake Dance in New Mexico or the present Arizona were the enterprising members of the exploring and colonizing expedition of Antonio Espejo, between 1580 and 1585. Espejo's own narrative has come down to us, and his achievements have also been committed to verse by one of his subordinates, a certain Villagrá, who rode a wind-broken Pegasus up the rocky Parnassian slope, and has been fittingly condemned as a poet by no less an authority than the late George Ticknor.

With due respect to Mr. Ticknor's judgment, the work of Villagrá is deserving of the first consideration from the ethnologist and historian. His verses may be lacking in elegance and harmony, his metre may be faulty for all I know to the contrary; but his descriptions are exact and his relation most vivid.

Ticknor admits in his "History of Spanish Literature," that he never read Villagrá, and no reference to either Villagrá or Espejo is to be found in the Catalogue of the Ticknor collection of the Boston Public Library; the copy which I read is in the Library of Congress.

The Snake Dance seen by Espejo's people occurred in the Pueblo of Acoma, then as now one of the most interesting of all the Pueblos. Villagrá's poem, "La Conquista de Nuevo Mejico," was printed at Alcalá de Henares, in Spain, about 1613.

Interest in the Moquis, Zuñis, and other Pueblos was kept alive in the minds of Americans by the writings and reports of men like Ruxton, Kendrick, Sitgreaves, Whipple, Ten Broeck, Charles Franklin, C. E. Cooley, and Joseph Wasson. About the year 1880 the heroic efforts of Mr. Frank Cushing to penetrate to the inner mysteries of these curious tribes began to attract deserved attention. Mr. Sylvester Baxter wrote a series of illustrated articles in the Eastern magazines, and succeeded in arousing the interest of men like the late Dr. Francis Parkman and Prof. E. N. Hosford, after whom came the munificent and ever gratefully to be remembered Mrs. Mary Hemenway of Boston.

Among army commanders, the late Lieutenant-General Sheridan, Major-General George Crook, Colonels Hatch, McCook and Bradley encouraged by such means as lay in their power the study of both the sedentary and nomadic tribes within their

jurisdiction, and Major J. W. Powell, of the Bureau of Ethnology, contributed experience and assistance of the first value.

It was like the chipping away of a rock under the mason's chisel; each day, each hour almost, saw a fresh particle of knowledge fall into our possession. Dr. Washington Matthews, Dr. Yarrow, Mr. James Stevenson, Mendileff, Lummis, Clarence Edwards, and the erudite Bandelier were the persistent chisellers, and it now remains only to be said that in no part of the world has more intelligent progress been made in anthropology than in our own Southwest.

E. B. Tylor, of Oxford, himself one of the most indefatigable of travellers and observers amongst Mexican Indians, was the first to note the important bearing all these observations were likely to have upon the correct understanding of ancient religions; among other things he pointed out the identity between the "bull-roarer" of the Greeks and the twirling rhombuses of the Moquis, Zuñis, Apaches, and Australians.

JOHN G. BOURKE.

Fort Ethan Allen, Vt., November 23, 1894.

Announcement.

I.

HEREAFTER the yearly issue of the JOURNAL will be divided into two volumes. The first volume will comprise the January, March and May numbers, and the second, the remaining numbers of the year. The index to each volume will be found in the May and the November number respectively.

II.

In accordance with the notification given March 1, 1895, a General Meeting of the Institution will be held at 3 o'clock on the afternoon of May 10, 1895, to consider the votes of the members regarding the proposed changes in the Constitution, M. S. I.

Prize Essay—1895.

I.—The following Resolution of Council is published for the information of all concerned:

Resolved, That a Prize of a Gold Medal of suitable value, together with a Certificate of Life Membership, be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest; the subject to be selected by the Executive Council and the Prize awarded under the following conditions:

1. Competition to be open to all persons eligible to membership.

2. Each competitor shall send three copies of his Essay in a sealed envelope to the Secretary *on or before September* 1, 1895. The Essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the Essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, should accompany the Essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.

3. The prize shall be awarded upon the recommendation of a Board consisting of three suitable persons chosen by the Executive Council, who will be requested to designate *the Essay deemed worthy of the prize;* and also in their order of merit those deserving of honorable mention.

In determining the essay worthy of the prize, the Board will be requested to consider its professional excellence, usefullness and valuable originality, as of the first importance, and its literary merit as of the second importance. Should members of the Board determine that no essay is worthy of the prize, they may designate one or more essays simply as of honorable mention; in either case, they will be requested to designate one essay as first honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention. Should it be so desired, the recommendation of individual members will be considered as confidential by the Council.

4. The successful Essay shall be published in the Journal of the Institution, and the Essays deemed worthy of honorable mention shall be read before the Institution, or published, at the discretion of the Council.

5. Essays must not exceed twenty thousand words, or fifty pages of the size and style of the JOURNAL (exclusive of tables).

II.—The Subject selected by the Council at a meeting held Nov. 9, 1894, for the Prize Essay of 1895, is

"*THE ART OF SUPPLYING ARMIES IN THE FIELD AS EXEMPLIFIED DURING THE CIVIL WAR.*"

III.—The gentlemen chosen by the Council to constitute the Board of Awards for the year 1895 are:

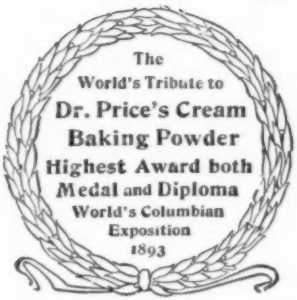
GENERAL S. B. HOLABIRD, U. S. Army.
GENERAL J. C. TIDBALL, U. S. Army.
GENERAL J. W. BARRIGER, U. S. Army.

JAMES FORNANCE,
Secretary.

GOVERNOR'S ISLAND,
March, 1895.

TWICE CROWNED VICTOR

IN A YEAR



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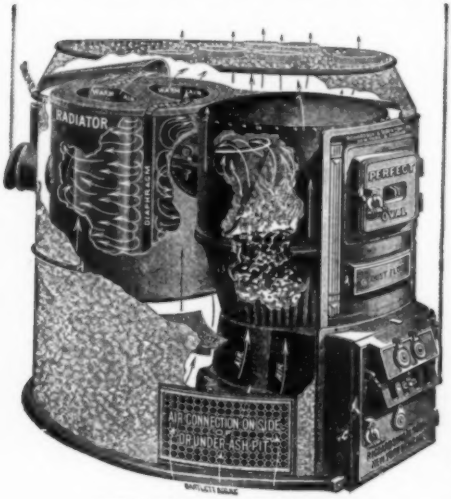

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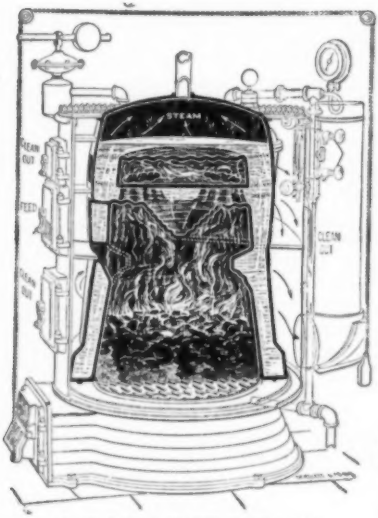

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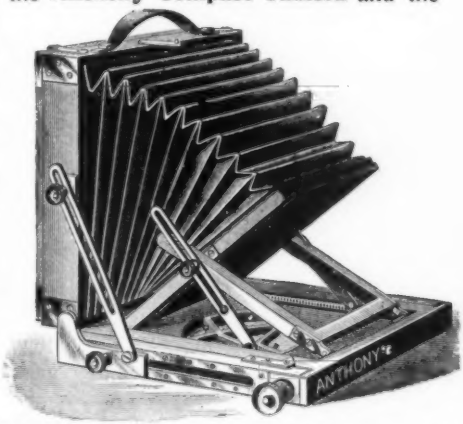

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THE SEVENTH REGIMENT OF CAVALRY.

By Major E. A. GARLINGTON, Inspector General, U. S. A.

RECRUITS for a regiment of cavalry were concentrated at Fort Riley, Kansas, in August, 1866. The work of organization was inaugurated by Major John W. Davidson, 2d Cavalry, on the 10th September, and completed by Colonel Smith, on the 22d December.

The new regiment was first designated in orders as the "Eighth Cavalry," but the figure eight subsequently gave place to the cabalistic number—seven.

Andrew J. Smith, a veteran of the Mexican War, who had been a distinguished cavalry leader in the Army of the West during the Civil War, was promoted colonel of the new regiment.

The first lieutenant colonel was that picturesque cavalryman, George A. Custer, who had been one of Sheridan's most trusted division commanders.

The senior major was a soldier of the old school—Alfred Gibbs; the other majors were Wickliffe Cooper and Joel H. Elliott, both young officers of great promise, and with distinguished war records.

Among the captains were, William Thompson, Frederick W. Benteen, Myles W. Keogh, Robert M. West, "Mike" Sheridan, Louis McLane Hamilton and Albert Barnitz.

The roster of lieutenants also showed many well-known names, among them: "Tom" Custer, brother of the general; W. W. Cooke, H. J. Nowlan, A. E. Smith, "Tom" Weir, Owen Hale, "Sam" Robbins, Myles Moylan, James M. Bell and Henry Jackson.

The regiment remained in Kansas four years and six months, and during that period performed every kind of duty that could fall to the lot of a trooper, and went through an experience scarcely realizeable to a young soldier of the present day.

Its scouts, marches and expeditions, extended from the Missouri River to the Rocky Mountains; from the Staked Plains of Texas to the Platte River. The summer's sun found it plodding over the arid, dusty plains as escort to commissioners, surveyors and what not, or dashing along in eager pursuit on a fresh Indian trail, and dealing vigorous strokes upon this savage enemy; the winter's snow served as a winding sheet to many of its gallant dead. The theatre of its operations was the scene of many well contested conflicts with its treacherous foe. Two seasons it fought the unseen but virulent enemy—Asiatic cholera. It subsisted for months on food unfit for human consumption, and as a consequence scurvy frequently prevailed among the men, weakening them to such a degree as to invite the more deadly disease—cholera.

This varied and trying service developed officers of determination and

endurance, of daring and skill; and at the same time eliminated the "dead-wood" which it discovered. The regiment, or fractions of it, demonstrated its *esprit* on over forty occasions in contest with the Sioux, Cheyennes, Kiowas, Comanches, Apaches, Arapahoes and Dog Soldiers. These began with a skirmish near Fort Lyon, Colorado, on the 13th April, 1867, and practically ended with the battle on the Washita in the Indian Territory on the 27th November, 1868,—although there were several smaller affairs along the Saline and Solomon during the summer of 1869.

Exclusive of the battle of the Washita the losses sustained in action were: killed, 11; wounded, 13; mortally wounded, 4; captured, 1; lost, one; six men were drowned in the performance of duty and fifty-one died of cholera.

The fight on the Washita was perhaps the most vigorously contested, and the most decisive battle ever fought with Indians up to that period, or even since. Eight hundred troopers, and over double that number of Indians were engaged in that encounter.

In addition to Black Kettle's village, which was captured and totally destroyed, there were within five miles of the scene of the battle over six hundred tepees standing along the Washita River during the fight.

Custer, under the cover of night, succeeded in surrounding the village, and as the morning dawned, lighting up the snow-covered valley, a signal—a single shot—rang out clear and distinct in the cold crisp air; the band struck up a stirring regimental air—"Garry Owen"—and the fight was on. Into the village the gallant troopers, cheering lustily, charged from all sides, each vying with his comrade to be first at the death. The fight raged furiously until about three o'clock in the afternoon.

How the regiment acquitted itself is shown in the following order:

HEADQUARTERS DEPARTMENT OF THE MISSOURI. IN THE FIELD.

Depot on the North Canadian, at the Junction of Beaver Creek,

Indian Territory, November 29, 1868.

General Field Orders No. 6:

The Major General Commanding announces to this Command the defeat, by the Seventh Regiment of Cavalry, of a large force of Cheyenne Indians, under the celebrated Chief, Black Kettle, reinforced by the Arapahoes under Little Raven, and the Kiowas under Satanta, on the morning of the 27th instant, on the Washita River, near the Antelope Hills, Indian Territory, resulting in a loss to the savages of one hundred and three warriors killed, including Black Kettle, the capture of fifty-three squaws and children, eight hundred and seventy-five ponies, eleven hundred and twenty-three buffalo robes and skins, five hundred and thirty-five pounds of powder, one thousand and fifty pounds of lead, four thousand arrows, seven hundred pounds of tobacco, besides rifles, pistols, saddles, bows, lariats and immense quantities of dried meat and other winter provisions, the complete destruction of their village, and almost total annihilation of this Indian band.

The loss of the Seventh Cavalry was two officers killed, Major Joel H. Elliott and Captain Louis McL. Hamilton, and nineteen enlisted men; three officers wounded, Brevet Lieutenant Colonel T. W. Custer, Brevet

Lieutenant Colonel Albert Barnitz (badly) and Second Lieutenant T. J. March (slightly) and eleven enlisted men.

The energy and rapidity shown during one of the heaviest snow storms that has visited this section of country, with the temperature below freezing, and the gallantry and bravery displayed resulting in such signal success, reflect the highest credit upon both the officers and men of the Seventh Cavalry; and the Major General Commanding, while regretting the loss of such gallant officers as Major Elliott and Captain Hamilton, who fell while gallantly leading their men, desires to express his thanks to the officers and men engaged in the battle of the Washita, and his special congratulations are extended to their distinguished commander, Brevet Major General George A. Custer, for the efficient and gallant service rendered, which have characterized the opening of the campaign against hostile Indians south of the Arkansas.

By command of Major General P. H. SHERIDAN,

(Signed) J. SCHUYLER CROSBY,
Brevet Lieutenant Colonel, A. D. C.
Acting Assistant Adjutant General.

The Secretary of War also sent the following telegram which was transmitted to the Regimental Commander:

WASHINGTON CITY, DECEMBER 2, 1868.

Lieutenant General SHERMAN, St. Louis, Mo.:

I congratulate you, Sheridan and Custer, on the splendid success with which your campaign is begun. Ask Sheridan to send forward the names of officers and men deserving of special mention.

(Signed) JOHN M. SCHOFIELD,
Secretary of War.

General Custer reported that it was impracticable to comply with the request contained in the closing sentence "for the gratifying reason that every officer and man belonging to the expedition has performed his full part in rendering the movement against the hostile tribes a complete success."

General Sheridan's order, issued upon the receipt of Custer's despatch written immediately after the battle, understates the loss; two officers and twenty-five men were killed, and three officers and twelve men wounded. Two white boys were rescued from the savages. During the engagement a bloodthirsty squaw was seen to murder a bright lad of about ten years by disemboweling him with a knife. In Satanta's abandoned village the bodies of a young white woman and a child were found cruelly mutilated.

A subsequent visit to the battle-field, and investigation among the prisoners and other Indians who were in the fight, disclosed a much greater Indian loss than was first reported. They acknowledged that one hundred and forty warriors were killed, and the number wounded must have swelled the aggregate loss to nearly four hundred.

General Sheridan, who was at Camp Supply, with his characteristic disposition to drive home a preliminary success, ordered Custer, now rein-

forced by the 19th Kansas Volunteer Cavalry, making a total force of about fourteen hundred men, to resume his operations against the hostiles, hoping by the aid of the biting frost of an unusually cold winter to force them to sue for peace and to return to their reservation.

The limit of this sketch makes it impossible to follow the operations of Custer's column; they are full of interest, and of incidents which go to prove his own wonderful energy, daring, pluck and resourcefulness, as well as the *esprit*, courage, and staying qualities of his officers and men. There was no more fighting Indians; but fighting cold, hunger and obstacles with which nature barred the routes of travel, was even more wearing and destructive to the efficiency of the command. On the march from Supply to Fort Cobb the regiment lost one hundred and twenty-eight horses; the "19th Kansas" one hundred and forty-eight.

Through the capture of Satanta and Lone Wolf, head chiefs of the Kiowas, and a threat to hang them at sunset on a certain day, that tribe was forced to come in and camp on the reservation near Fort Cobb.

By the extraordinary efforts of Custer with a detachment of two officers and fifty five men, and a march of three hundred and fifty miles, the Arapahoes were located and brought back to their reservation, where they have remained at peace with the whites. The Cheyennes now alone remained obdurate to the peaceful efforts of the Government. They were finally located in Northern Texas. By a well conceived and successfully executed stratagem Custer captured three of the principal chiefs of the tribe, and by the exercise of great patience and forbearance, Mrs. Morgan and Miss White, two white captives held by them, were delivered to Custer; and an agreement entered into on the part of the Indians to return to their reservation, and on the part of Custer to restore to their people the three chiefs and the women and children captured at the Washita. The Indians complied with their part of the contract; and the Government, as far as it was able, fulfilled its stipulation.

With the return of the Cheyennes to their reservation the work of the expedition south of the Arkansas was done. The regiment was withdrawn and the "19th Kansas" mustered out of the service.

The extreme severity of this winter's campaign will be appreciated when it is remembered that Custer left Camp Supply on the 7th December 1868, with fourteen hundred cavalry, and now, on the 5th March, 1869, his mounted effective strength was reduced to six hundred and fifty men.

General Sheridan in a letter to Custer said: "I am very much rejoiced at the success of your expedition, and feel proud of our winter's operations and of the officers and men who have borne its privations and hardships so manfully. * * * Give my kind regards to the officers and say how happy I should be to see them should any of them come this way on leave."

Colonel Smith resigned in the spring of 1869, and was succeeded by Brevet Major General S. D. Sturgis, promoted from Lieutenant Colonel 6th Cavalry.

In March, 1871, the regiment was relieved from duty in the Department of the Missouri.

HEADQUARTERS DEPARTMENT OF THE MISSOURI.

FORT LEAVENWORTH, KANSAS, MARCH 8, 1871.

General Orders No. 4.

Orders transferring the 7th Cavalry from this Department having been received from Headquarters of the Army, the Commanding General deems it his duty to express to the officers and soldiers of the regiment his high appreciation of their soldierly qualities and of the conspicuous services performed by them in this department.

The regiment carries with it a noble record of faithful services and gallant deeds. During the four years which it has been in this Department it has experienced all of the hardships, dangers and vicissitudes attendant upon military operations on our wild frontier. It has made many long and toilsome marches exposed to the severest storms of winter, and has gone for days in that inclement season without shelter and almost without food for man or animal.

It has been engaged in many bloody combats with the Indians in which its valor has been thoroughly tried and proved. It has met all dangers and privations with firmness and intrepidity and has been distinguished throughout for steady discipline and efficient performance of duty.

The present soldierly condition and high state of discipline of the regiment give assurance that in the new field to which it is ordered it will be distinguished for the same high qualities which have so justly earned for it its brilliant reputation in this command.

With sincere regret the Commanding General sees this regiment leave this Department. It is needless to say that it will carry with it his hearty good wishes and his confident hope that its future will be as successful as its past history.

It will be long remembered in the Department as a model of soldierly discipline and efficiency.

By command of Brigadier General Pope:

(Signed) W. G. MITCHELL,

Brevet Colonel, U. S. A.

Acting Assistant Adjutant General.

The scene now shifts to the Department of the South, where we find the regiment scattered through seven States, serving as a sort of adjunct to the Department of Justice, acting as posse comitatus for United States Marshals. This constabulary duty continued for two years, when orders were issued transferring the regiment to Texas. The restless and threatening attitude of the Sioux in the Department of Dakota made it necessary to send cavalry there, and upon the application of General Sheridan the "Seventh's" destination was changed to the Northern Department.

April, 1873, found all the regiment, except the colonel, his staff and two troops, at Yankton, Dakota.

General Sturgis was assigned to station at St. Paul, Minnesota, and Major Reno, with one squadron, was detailed for escort duty with the international commission locating the boundary line between the United States and the British possessions; this squadron remained on this duty until the autumn of 1874.

While detained at Yankton, waiting for wagon transportation, and for the ice to run out of the river, the regiment was introduced to a genuine Dakota blizzard, the worst it experienced during its fourteen years service in the Territory. On the 10th June the regiment reached Fort Rice, and Custer reported to General D. S. Stanley for duty with the expedition then fitted out for the Yellowstone. This expedition was "designed for the protection of engineering surveyors of the Northern Pacific Railway," and consisted of about fifteen hundred men and two guns.

The column left Fort Rice on the 24th June. On the 4th August Custer, who had according to his usual custom gone ahead of the main column with one squadron (ninety men), was attacked at a point on the north bank of the Yellowstone River about four miles above the present site of Fort Keogh, Montana, by three hundred Indians.

The Indians, well armed with breech-loading rifles, fought with great stubbornness for three hours and a half. The ammunition of the troops was about exhausted when by a well directed mounted charge the Indians were driven from the field.

One trooper was wounded; the loss among the Indians was heavy, for the troops fought dismounted and under cover, while the Indians charged gallantly within very short range.

The same day the Regimental Sutler, the Veterinary Surgeon and one private were killed by a small party of Indians, while trying to join Custer from the main column. The trail of a large village was discovered on the 8th, and Custer was detached with his cavalry and a company of Scouts under Lieutenant D. H. Brush, 17th Infantry, to follow and strike the Indians. The pursuit was begun as soon as night fell and prosecuted with great vigor.

On the morning of the 11th the Indians attacked Custer while in camp on the Yellowstone, about opposite the mouth of the Big Horn River. A spirited engagement ensued. Lieutenant Braden, who held a prominent point on the left flank with a small detachment while Custer made his dispositions, was charged by one hundred warriers, the Indians riding to within thirty yards of his dismounted line. He was shot through the thigh bone, but with the most wonderful exhibition of cool nerve maintained his position, and repulsed the daring savages.

On the bluffs south of the river, old men, squaws, and children were seen in large numbers, evidently waiting in fiendish anticipation the time for their brutal part in the drama; but their dusky braves could not face the vigorous charge of the "pony-soldiers." They broke in complete rout, the cavalry pursuing them for eight miles, when they escaped by crossing the Yellowstone.

The regiment lost in this engagement one officer, Lieutenant Charles Braden, and two enlisted men wounded; and one enlisted man killed. Several officers had horses shot under them.

The Indian loss was estimated by Custer to be forty killed and wounded on the north side, while several were known to have been knocked over on the south bank. There were nine hundred Indians engaged in the attack; this number was afterward verified by the Indians who were present.

General Custer in his official report of the fight says: "I desire to bear testimony to the good conduct of every man connected with my command, including officers, men and scouts. Where all did so well no special mention can be made."

No Indians were seen during the remainder of the season. The expedition continued the march as far as the Mussel Shell River, whence it returned to Fort A. Lincoln.

General Sheridan in his annual report for 1873 recommended the establishment of a large military post near the base of the Black Hills in order "to secure a strong foothold in the heart of the Sioux country, and thereby exercise a controlling influence over these warlike people." Pursuant to his directions an expedition was organized at Fort A. Lincoln in June, 1874, for the purpose of reconnoitring the route from that post to Bear Butte, in the Black Hills, and exploring the country south, southeast, and southwest of that point. Custer was detailed to command the expeditionary force, which consisted of ten troops of the 7th Cavalry, two companies of infantry and a detachment of scouts; and was directed to return to Fort A. Lincoln, within sixty days. Colonels G. A. Forsyth and Fred Grant of Sheridan's staff accompanied the command; also Captain William Ludlow, C. E., as Engineer Officer.

Leaving Fort A. Lincoln in July we find the expedition at Custer Park —near the present site of Custer City, S. D.,—on the last day of the month. There was a well equipped scientific party with the expedition, and much valuable information gathered as to the geology, zoölogy, paleontology of the region explored; but the presence of precious metals in large quantity appears to have been doubted.

In September, 1874, six troops and Major Lewis Merrill were ordered to the Department of the Gulf. The troops were assigned to stations at different points in Louisiana and Alabama, where they remained, performing constabulary duty until the spring of 1876.

During the summer of 1875 the troops in the Department of Dakota were in the field removing "prospectors" from the Black Hills.

In the winter of 1875-76 Tom Custer captured at the Standing Rock Agency, Rain-in-the-Face, a noted Sioux chief, who was the principal actor in the murder of the sutler and the veterinary surgeon in August, 1873. He escaped from the guard house at Fort A. Lincoln and is reputed to have killed Tom Custer in the massacre on the Little Big Horn.

In the spring of 1876 the troops of the regiment in the South were recalled, and the entire regiment, Custer commanding, concentrated at Fort A. Lincoln for duty with Terry's column in the general movement about to be inaugurated against the Great Sioux Nation.

The column left Fort A. Lincoln on the 17th May, and the first signs of Indians, the trail of a large body, were discovered on the Rosebud River about the 15th June by Reno, while on a scout. On the 22d June, Custer with the entire regiment, was detached to follow this trail.

By rapid marches, day and night, half-past ten o'clock on the morning of the 25th June found the regiment about to begin the ascent of the divide between the Rosebud and the Little Big Horn rivers.

Early the same morning the hostile camp had been located by the scouts in the valley of the Little Big Horn. It was Custer's intention to remain concealed until night, and then make his dispositions to attack the Indian village at dawn on the 26th; but shortly after halting he received information which assured him that his presence was known to the hostiles.

To prevent their escape he determined to march at once to the attack.

Custer divided his regiment into three squadrons; one, of five troops, he commanded himself, the other two, of three troops each, were commanded by Reno and Benteen respectively.

Reno had the advance, and he was ordered "to move forward at as rapid a gait as he thought prudent, and charge the village afterwards, and the whole outfit would support him." He directed Benteen to move off to the left and south until he could see the valley of the Little Big Horn—to attack anything he found, and to send him word.

When about three-quarters of a mile from the Little Big Horn Custer swung off the trail to his right, evidently intending to support Reno's attack by striking the Indians in flank.

It was now about one o'clock in the afternoon. Reno moved forward and crossed the river without molestation, delaying twenty minutes to water. He continued his advance down the valley under a desultory fire for two miles, when he was brought to a stand by a large mounted force of Indians. Instead of charging as ordered, he dismounted his squadron to fight on foot. The left was held by the Ree scouts who fled at the first real attack; the line, thus uncovered, fell back to the timber. This position was fairly well protected. Up to this period one man had been wounded.

The second position was probably held twenty minutes, when Reno ordered the squadron to "mount and get to the hills." As soon as the retreat commenced the Indians swarmed around the right flank and forced the column towards the river; the ford over which Reno came could not be reached, but a pony trail was found crossing about a mile and a half below and leading up a narrow ravine to the bluffs on the right bank of the river. The banks were precipitous, and the outlet narrow, but under the impulse of showering lead the ascent was made and the high bluff gained. In this retreat two officers, twenty-eight enlisted men and one scout were killed, seven enlisted men wounded, and one officer (Lieutenant DeRudio) and eighteen enlisted men and scouts missing.*

As near as the time can be fixed, it was now about two o'clock. Benteen was unable to execute his orders by reason of the broken country, and was forced back to the trail of the main column. Soon after reaching the trail, a trumpeter from Custer's squadron delivered to him the following despatch: "Benteen, come on. Big village. Be quick. Bring packs. Sgd. Cooke. P. S.—Bring packs." He took the gallop and reached Reno on the bluffs about half-past two o'clock. Very soon after Benteen's arrival the Indians withdrew from the attack. A large number of mounted warriors were seen in the valley, and suddenly all of them moved down the stream. From the most authentic information received from Indians who

* Fourteen of these men reached the bluffs about three hours after Reno; DeRudio and three men came in during the night of the 26th.

were present at the memorable struggle, it appears that Custer after leaving Reno's trail followed down the general course of the river, but behind the bluffs, for about five miles, evidently looking for a favorable outlet in the hills through which he could strike the village.

By the time he reached his farthest point Reno had been driven to the bluffs, and his own presence was discovered. The Indians evidently thought Reno's squadron after reaching the high ground had left a detachment of observation there and had gone down the river under cover of the bluffs, and formed a junction with Custer's column, for all authorities seem to agree that no considerable force remained in front of Reno after about three o'clock. It was near this hour when Custer was discovered.

Three thousand warriors, armed with the best magazine rifles, gathered in the ravines and coolies and burst upon Custer's intrepid band.

Of course it was but a question of time; encumbered with the led horses; provided with an inferior arm; the Indians not only twelve to one, but each of these twelve firing at close quarters five shots to every soldier's one, the end was soon reached. At five o'clock Reno made an effort to join Custer but it was too late.

The warriors were free to drive Reno back to his former position, and to besiege him with vigor until darkness shrouded the bloody scene. But it brought short rest for the command. New dispositions were made; the wounded were made as comfortable as possible. Every available man with such instrument as he could find was put to digging holes, or rude sort of intrenchments. In the direction of the Indian village the horizon was aglow with reflected light.

With the dawn of day came the whirr of bullets, and all day, the 26th, the Indians vainly sought to dislodge the troops; at seven o'clock that evening they gave up the attack and moved off toward the Big Horn mountains.

On the morning of the 27th General Terry, with Gibbon's column, arrived on the battle-field and discovered Custer's fate.

The scene of the fight was visited the next day, and it presented a most heartrending spectacle. The bodies of the dead were horribly mutilated, except that of General Custer.

The dead were found by troops, with little piles of empty cartridge shells beside each man—mute testimony of the cohesion and discipline which existed in the brave band until the end. Near Custer lay his two brothers, his nephew and his adjutant.

Custer took into the fight eleven officers and one hundred and ninety-one enlisted men; all were killed. The officers were: Lieutenant Colonel George A. Custer; Captain Myles W. Keogh, commanding Troop I; Captain George W. Yates, commanding Troop F; Captain Thomas W. Custer, commanding Troop C; First Lieutenant William W. Cooke, Regimental Adjutant; First Lieutenant Algernon E. Smith, commanding Troop E; First Lieutenant James E. Porter, with Troop I; Second Lieutenant Henry M. Harrington, with Troop C; Second Lieutenant James G. Sturgis, with Troop E; Second Lieutenant William Van W. Reilly, with Troop F.

The following accompanied the command and were killed with Custer:

Second Lieutenant John G. Crittendon, 20th Infantry, attached to Troop L; Acting Assistant Surgeon J. M. DeWolf; Mr. Boston Custer and Mr. Artie Read, civilians, brother and nephew of General Custer; Scout Charley Reynolds, and Curley—a negro.

With Reno two officers of the Seventh Cavalry were killed—First Lieutenant Donald McIntosh, commanding Troop G; Second Lieutenant Benjamin H. Hodgson, Squadron Adjutant—and forty-six enlisted men. Those attached to the command and killed were Acting Assistant Surgeon G. E. Lord, Scout Bloody Knife—a Ree Indian. Forty-four enlisted men were wounded.

The wounded were sent by steamboat to Fort A. Lincoln, and from that point, on the 7th July, 1876, news of the terrible disaster flashed across the wires to the East. More troops were at once ordered to the Yellowstone. Upon their arrival offensive operations were resumed. But appalled by their own acts of savage brutality, and fearing summary punishment by the Government, the Indians resorted to the old and effective trick of dispersion, and set the troops to fruitless marches and countermarches for the rest of the summer. The Seventh Cavalry was relieved from duty in the field in the latter part of September, and returned to Fort A. Lincoln. The enlisted strength of the regiment was increased to twelve hundred men.

On the 20th October General Sturgis with eight troops crossed the Missouri River and proceeded to the Cheyenne Agency to disarm the Indians at that Agency and to capture their pony herds; Reno with four troops, marched to the Standing Rock Agency to perform the same duty there.

A large number of broken, obsolete and worthless guns, a few serviceable arms, and about two thousand ponies were secured.

Upon the completion of these movements the troops were assigned to stations for the winter.

The regiment, except Troop C, was concentrated at Fort A. Lincoln on the 30th April, 1877, and the next day started again for the Yellowstone country, to report to General N. A. Miles, commanding the District. At this time Sitting Bull and his contingent were known to be north of the "line," and thought to be contemplating an expedition into the United States, in connection with a hostile movement of the Indians belonging to the agencies on the upper and lower Missouri.

The regiment was so placed as to scout the divide between the Yellowstone and Mussel Shell, and furnished one troop (B) to an infantry command performing a like duty south of the Yellowstone. A little later, another troop (E) was detached for duty under Lieutenant G. C. Doane, 2d Cavalry, with a large force of Crow Indians which he was endeavoring to utilize in scouting operations in the upper Yellowstone country. In August Miles was apprised of the escape of the Nez Percé Indians from Howard, and that the direction of their march indicated that they were making for his territory.

He ordered Sturgis to proceed with six troops, three hundred and seventy-eight men and one Napoleon gun, towards Judith Basin to endeavor to place his command where he could intercept Chief Joseph and crush him; at the same time directing him to hold his command in condition and

in position to concentrate at the mouth of the Rosebud by the 15th September for operations against Sitting Bull.

Now came a month of hard and continuous marching,* and during the afternoon of the 13th September Sturgis overtook the Nez Percés just as they were entering the cañon of Cañon Creek, Montana.

A brisk engagement followed in which the command lost three enlisted men killed, Captain Thomas H. French and ten enlisted men wounded. The Indians lost sixteen killed and a large number of ponies were captured.

The Indians stubbornly held all direct approaches to the Cañon, and it was necessary to flank it, which, owing to the extremely rough country, took time, and darkness set in before a "clean up" could be made. At dawn the following day the pursuit was resumed. During the day five Indians were killed and many ponies captured, but the Indians could not be brought to stand owing to the exhausted condition of the cavalry horses,—ninety-three were killed and abandoned on the march. The command had been on half rations for several days; the supplies now gave out completely. A courier had been sent to General Miles on the morning of the 13th informing him of the direction of Joseph's march. When Sturgis became convinced that he could not overtake the Indians before they reached the Missouri River he decided to delay his march. It was reasonably certain that Chief Joseph would at least diminish the rate of his march as soon as the troops ceased pushing him, and thus Miles would have a better opportunity to place his command in position. By a happy combination of skill and luck he was able to seize the opportunity, and on the 30th September, at a point a little northeast of the Bear Paw Mountains in Montana, his Cheyenne scouts discovered the Indian village.

The Indian camp had been most admirably selected for defense; it lay in the valley of Snake Creek and was traversed by deep coolies in such a manner as to afford concealment, and give protection from fire from what direction soever the position was approached. In the banks of these coolies and ravines a most skillful system of rifle-pits was constructed. South of the village, the direction from which the attack was made, ran a high perpendicular bank over which it was impossible to take cavalry, and which was lined with the Nez Percés warriors completely concealed from view.

When the troops sighted the village it seemed accessible from all sides, except perhaps the east. Hale was ordered to charge the village with his squadron of the Seventh Cavalry (Troops A, D and K). The gallant troopers burying their spurs into their horses' flanks, rushed forward to the attack. The Indians held their fire until the squadron was within point blank range when they saluted it with a murderous volley; but on they charged to within twenty yards of the Indian line. In the charge Troop K (Hale) had wheeled to the right to attack a body of Indians which enfiladed the attacking line. Moylan, commanding A and D, when he discovered the perpendicular bank, saw that it was impossible to descend it, wheeled his troops about, withdrew, and formed on the right of the 5th Infantry, some two or

*Lieutenant E. B. Fuller, with a detachment of five men, marched without a change of horses three hundred and fifty miles in five days.

three hundred yards in the rear. During this movement the fire was very heavy, but the Indians were so close that they shot too high. Up to this time the loss in Troops A and D was three killed and four wounded.

While moving to the rear, Captain Godfrey, marching in rear of his troop, had his horse shot under him.

Hale also charged up to an impassable ravine, withdrew about two hundred yards and dismounted his troop to fight on foot in a somewhat isolated position on the right. For some time almost the entire Indian force was concentrated on him, inflicting severe loss. Troops A and D dismounted and advanced to his assistance at double time under a galling cross-fire, sustaining a heavy loss. In this advance, Godfrey, who had remained mounted, was wounded and taken from the field. After Moylan placed his line in position and was in the act of reporting to Hale, he was shot through the thigh. Soon after Hale himself was killed while encouraging the inexperienced young soldiers of his command.

Biddle had been killed in the first charge. There was now but one officer, Lieutenant Eckerson, for duty with the three troops. All the First Sergeants were killed, also several sergeants and corporals. The squadron of the Seventh Cavalry now occupied the high ground east of the village. Lieutenant Romeyn, 5th Infantry, in command of Troops A and D, 7th Cavalry and Company G, 5th Infantry, was ordered to charge simultaneously with Lieutenant Carter, and Company I, 5th Infantry, from the southwest end and endeavor to cut the Indians off from their water supply. The rifle pits were reached, but the Indians drove the force back. Romeyn was shot through the lungs. This practically ended the fighting for the day, and during the night the troops were posted around the Indian village and threw up such intrenchments as they could with the tools at hand.

The 12-pounder arrived on the evening of the 1st October and by burying the trail in the ground, and using very light charges of powder some shells were dropped in among the Indians, inflicting great loss.

Miles had several parleys with Joseph, and finally, on the 4th October, he surrendered his people—four hundred and eighteen in all—of which eighty-seven were men. One hundred and four escaped to Canada.

In this engagement Miles' losses were: two officers and twenty-two enlisted men killed; four officers and thirty-eight enlisted men wounded, of which the Seventh Cavalry lost *two officers* and *nineteen enlisted men killed*, and *two officers* and *twenty-seven enlisted men wounded*, a total loss of *fifty-one* out of *one hundred and eight men* engaged—very nearly fifty per cent. Miles' command numbered during the first two days, three hundred and twenty-three men and thirty Cheyennes, it was afterwards increased by forty men of Brotherton's Company of the 5th Infantry.

Sturgis reached the Missouri at Carroll on the 1st October, and the same day received orders from Miles to move forward rapidly and cautiously—that he had Joseph surrounded.

On the 4th, when within two hours' march of the battle-field, he received orders to halt—that the surrender was complete.

The uncertainty of Sitting Bull's intentions and movements kept the

forces in the field well into the winter, and the troops did not all arrive at their stations until January, 1878.

After a few months of rest and recuperation a permanent camp was established at Bear Butte, in the Black Hills, all the regiment, under Sturgis, being present except Troop F, which remained at Fort Totten.

In September the Cheyenne Indians left their reservation in the Indian Territory crossed the States of Kansas and Nebraska, committing depredations along their route of march. They evaded all pursuers and were apparently heading for the great agencies in Dakota. The possible introduction of an openly hostile element into any of these great camps was viewed with great apprehension by the military authorities, and stringent orders were issued to prevent it. The new agency for Red Cloud was at this time being established at White Clay Creek.

Under telegraphic orders the camp at Bear Butte was broken up, and the command, under Tilford, moved with as much dispatch as possible to a point near this Agency to observe it, and in conjunction with other troops, to keep out the Cheyennes, capturing them if possible. When the Cheyennes found that their scheme of joining the Sioux was frustrated, and that the gateways to the North was held by troops, they broke up into small parties so that they might sneak through the line. One band did escape around the western end of the Black Hills. Another was captured by a squadron of the 3d Cavalry under Captain J. B. Johnson. This band, when in the first camp after surrender, experienced a change of heart and positively refused to accompany Johnson any further. They burrowed in the ground, and otherwise constructed a most skillful system of defense. Two troops of the Seventh Cavalry and a piece of artillery went to the assistance of Johnson. When the Indians saw the resources and preparations of the troops for immediate action, they concluded to come out of their holes and to go with their captors.

In November the regiment was relieved from duty in the field, and after detaching two troops to establish a cantonment on the present site of Fort Meade, S. D., returned to its former station.

The next summer regimental headquarters and six troops garrisoned the new post of Fort Meade, Dakota.

Aside from maintaining camps of observation on the Little Missouri River during the summer, escort duty in the construction of the Northern Pacific and Great Northern railroads, scouts and expeditions for special purposes, the service in the Department of Dakota after 1878 was confined to garrison work. Among the scouts may be mentioned the capture by Lieutenant Bell of a band of Canadian half-breeds in the autumn of 1883. Troop F was present and participated in the capture of the remnants of Sitting Bull's and Gaul's camps at Poplar River Agency, during the winter of 1880–81.

On the 11th June, 1886, Colonel Samuel D. Sturgis, Brevet Major General, U. S. A., retired from the service, having reached the age of sixty-four years. General James W. Forsyth, Lieutenant Colonel 1st Cavalry, succeeded to the Colonelcy.

Troop A participated in the affair which terminated with the killing of

"Sword Bearer" at the Crow Agency, Montana, on the 5th November, 1887.

Regimental headquarters and one squadron were transferred to the Department of the Missouri during the summer of 1887.

Upon General Forsyth devolved the duty of establishing the School of Practical Application for Cavalry and Light Artillery located at Fort Riley, Kansas. The next year the remaining squadrons followed the first, one taking station at Fort Riley, the other at Fort Sill, Indian Territory. In 1888, 1889, and 1890 that portion of the regiment at Fort Riley attended Grand Army reunions or Militia encampments at Lawrence and Topeka, Kansas. The troops stationed at Fort Sill did their share of duty on the "cattle trail" leading through the Territory. In the autumn of 1889, the regiment, except Troop E, was united for the last time at the field manœuvres of that year on Chilocco Creek, Indian Territory. In September, 1890, Troops L and M were skeletonized, and the officers and men merged into other organizations.

The year 1890 is memorable for the Sioux outbreak after a peace of more than ten years. The history of this disturbance of the friendly relations which had existed for so long a period is full of interest, but only a passing reference can be made to it. Religious fervor, including the belief in the advent of a Messiah, the resurrection of the dead, the return of the buffalo and the departure of the white man from the Indian country, seized the savage mind; and its manifestations in the ghost dance and other ceremonies gave rise to the belief on the part of agents and others that the entire Indian nation meditated war.

Whether this belief was correct or not has never been definitely decided. In November the agent at Pine Ridge, South Dakota, not equal to the emergency which presented itself, deserted his post of duty, reported his Indians on the eve of war and called for military protection.

Immediately orders were issued for the concentration of a large force at Pine Ridge, under Brigadier General John R. Brooke. The headquarters and eight troops of the regiment formed a part of this force. At the same time troops were placed at strategical points north of this agency in the Department of Dakota. One of these commands was located on the Cheyenne River in observation of Big Foot's band, and of other Indians camped in that city.

Nothing of a hostile character occurred at Pine Ridge Agency for several weeks after the arrival of the troops. The time was spent in negotiating with a camp of Brulés and malcontents from Pine Ridge, which had been established upon the approach of troops in the Bad Lands north of White River. This was called the hostile camp. These negotiations, which looked to bringing these Indians into the agency, were progressing with a fair prospect of success until the news of the killing of Sitting Bull near Standing Rock was received, when they were to some extent interrupted. They were, however, resumed until broken off by an actual collision between the Indians and troops. Big Foot was a bad Indian, a disturbing element. In his camp the followers of Sitting Bull, who escaped when he was killed, found an asylum. There were also other renegades from the Missouri River agencies. On the night of the 22d December he escaped

with his village from the troops that were supposed to hold him. The Major General commanding the Division, then at Rapid City, South Dakota, informed General Brooke of the escape, of the desperate character of the Indians, and impressed upon him the necessity of capturing, disarming and holding them under close guard.

On the 26th December, Forsyth, under orders from Brooke, sent Whitside's squadron, and two Hotchkiss guns under Lieutenant H. L. Hawthorne, 2d Artillery, to the Wounded Knee Post Office, the purpose being to capture Big Foot's band if he should come that way. Brooke informed Whitside on the 27th that Big Foot must be in his front, and directed him to "find him, to move on him at once and with rapidity, to capture him, *and if he fought to destroy him.*"

Whitside did capture him on the 28th, without a fight, about six miles from Wounded Knee Post Office. The Indians were conducted to the camp which had been left standing on the Wounded Knee. They were assembled, counted, and rations issued to three hundred and fifty persons; one hundred and twenty bucks, the rest women and children.

Whitside reported his successful capture and requested reinforcements, that the disarmament, which was to be consummated on the morrow, be accomplished without bloodshed.

In response to his request Forsyth arrived during the night of the 28th with Regimental Headquarters and the second squadron; two Hotchkiss guns under Captain A. Capron, 1st Artillery; and Lieutenant Taylor, 9th Cavalry, with his troop of scouts, to which was attached Lieutenant Preston, 9th Cavalry. Forsyth's instructions were to "disarm the Indians where they were camped, to, *under no circumstances allow any of them to escape, and to destroy them if they resisted;*" and as soon as the disarmament was completed to leave Whitside in charge and return at once to the agency.

Early the next morning Monday, the 29th of December, Forsyth made his dispositions to disarm the Indians, peaceably if possible, by force if necessary.

The bucks were invited into council between their own village and the camp; nearly all of them, one hundred and six, came wrapped in blankets. Big Foot remained in his tent.

General Forsyth, kindly and pleasantly, yet firmly, demanded the surrender of their arms. While the negotiations were progressing, a young buck fired into the soldiers. The others threw aside their blankets which concealed their weapons, and poured a murderous fire into the troops, which had been posted between them and their village, following it up as rapidly as their repeating rifles could belch forth the lead. The fight raged on the flat about one hour before it was cleared entirely of Indians. Here Captain George D. Wallace, commanding Troop K, and twenty-one enlisted men, including one hospital steward, were killed; Lieutenant Ernest A. Garlington was shot through the right elbow; Lieutenant John C. Gresham rereceived an abrasion on the nose from a passing bullet; Captain Charles A. Varnum had his pipe knocked from his mouth by a bullet; Captain John Van R. Hoff, Assistant Surgeon, received several bullets through his clothing, and twenty-one enlisted men were wounded. Father Craft, a

Catholic priest, who was present using his good offices to persuade the Indians to submit to the demands made of them by General Forsyth, received a vicious stab in the back which penetrated his lung. Scout Wells had his nose nearly cut off. Lieutenant John Kinzie, 2d Infantry, who was present as a spectator, was shot through the foot.

Some of the Indians, many of them wounded, escaped to a ridge of hills lying just west of camp, and secreted themselves in stump holes and inaccessible ravines. It was while attempting to dislodge a party which was doing considerable execution that Lieutenant H. L. Hawthorne, 2d Artillery, received a very severe wound. The fighting in the hills was done by Troops C, D, E and G, which were mounted at the beginning of the engagement. They lost four men killed and four wounded; Lieutenant Donaldson was struck by a bullet with sufficient force to penetrate his leather belt and his clothing. There were many acts of individual bravery and gallantry, but every man showed himself a soldier—with the nerve born of disciplined courage.

Although a very small percentage of the enlisted men had ever been under fire before—sixty recruits having joined at Pine Ridge—and the attack was sudden, there was no undue excitement. Each man obeyed orders, stood his ground, and shot to hit, and proved himself worthy of the number he wore upon his cap. One hundred and forty-six Indians were subsequently buried on the field; and there was undoubted evidence that many bodies had been removed; thirty-three Indians, nearly all wounded, were captured. The "hostiles" reported seven Indians as having escaped to their camp—all wounded except one.

The fight was over about three o'clock in the afternoon.

In view of the possible effect of this fight upon the other Indians, and for the better care and protection of his wounded, Forsyth moved his command to the agency, arriving there about eleven o'clock at night.

At six o'clock on the morning of the 30th he was called to go to the assistance of Major Henry's wagon train which had been attacked near the agency. One hour after his return to camp he was ordered to go the Drexel Mission, four miles from the agency which was reported attacked by the hostiles. It proved to be a false alarm.

When about to return, Little Bat, a scout, reported that he had heard the "firing of big guns" down the White Clay. Knowing that troops were located in that direction on the other side of the supposed position of the hostile camp, Forsyth determined to make a reconnaissance in force down the stream, to either confirm or demonstrate the error of the report. To guard against emergencies he sent couriers to General Brooke and Colonel Henry, asking that the latter join him at once.

The scouts, under Lieutenant Preston, 9th Cavalry, developed a small force which was pushed back by the advance guard. The number of Indians rapidly increased until the hills were full of them—at least three or four hundred opposed the advance of the troops. Forsyth's instructions did not contemplate a general engagement which he knew would be precipitated if he pushed matters, and as soon as he became convinced that there was no heavy firing down the White Clay he decided to withdraw.

He was in the act of withdrawing his troops when Henry's squadron of the 9th Cavalry arrived, having promptly responded to Forsyth's request. These troops were placed in position, under Forsyth's direction, and assisted in the completion of the movement.

The loss in this engagement was one enlisted man killed; Lieutenant James D. Mann, and six enlisted men wounded. Lieutenant Mann died of his wound, at Fort Riley, Kansas, on the 15th January, 1891. The loss among the Indians is unknown.

On the 30th December, 1890, the Major General commanding the army telegraphed to the Major General commanding the forces at Pine Ridge, asking him to thank the "Brave Seventh Cavalry for their splendid conduct."

In the latter part of January the Indian problem at Pine Ridge was settled to the satisfaction of the Major General commanding. The prompt and drastic punishment awarded treachery at Wounded Knee contributed in no small measure towards bringing the hostile Indians to a realizing sense of their obligation to comply with the demands of the Government. The troops were relieved and sent to their stations.

The train carrying the second squadron of the Seventh Cavalry, and Capron's battery of the 1st Artillery, collided with a passenger train, running at full speed, when within a short distance of Fort Riley. The wreck was complete; the escapes from death and injury miraculous. A sergeant of artillery and a private of cavalry were killed, and Captain E. S. Godfrey, 7th Cavalry, sustained a painful and permanent injury.

During the year 1891, Troop L was reorganized as an Indian troop by 1st Lieutenant H. L. Scott, and is now stationed at Fort Sill, Indian Territory. Lieutenant Scott is an expert in all that pertains to Indians, and through his familiarity with their character, and his ability to deal with them without the aid of an interpreter he has attained the most satisfactory results. Troop F was transferred to the Department of the East in the spring of 1892, and to the Department of Texas in 1894. Troops C, D and G, left Fort Riley on the 24th December, 1892, for Texas, to engage in the movement looking to the capture of the Mexican Revolutionist, Garza, and his followers in Texas. After a winter in the chapparral they took permanent station in that Department.

Three monuments have been erected to mark the great events in the regiment's history; one on the battle-field of the Washita, a homely pile of stone placed by Lieutenant H. L. Scott, 7th Cavalry; one on the Little Big Horn, built by the Government; and another at Fort Riley, Kansas, erected by the members of the Seventh Cavalry and of the Medical Department, stationed at Fort Riley.

Colonel Forsyth was promoted Brigadier General 9th November, 1894, and was succeeded by Colonel E. V. Sumner.

THE NINTH REGIMENT OF CAVALRY.

By Lieutenant GROTE HUTCHESON, Adjutant 9th U. S. Cavalry.

THE subject of this sketch first came into existence by virtue of an act of Congress entitled "An Act to increase and fix the military peace establishment of the United States," approved July 28, 1866. To the six regular cavalry regiments then in service, this Act added four additional ones, "two of which shall be composed of colored men, having the same organization as is now provided by law for cavalry regiments." The organization of the colored regiments was modified in a few particulars, notably, by including a regimental chaplain, whose duties were enlarged to include the instruction of the enlisted men. Up to this time all chaplains had been appointed in the army, designated to posts, and known as post chaplains.

The original vacancies in the grades of first and second lieutenant were to be filled by selection from among the officers and soldiers of volunteer cavalry; two-thirds of the original vacancies in the higher grades by selection from among the officers of volunteer cavalry; and one-third from among officers of the regular army. It was further provided that to be eligible for selection, an active service of two years in the field during the War of the Rebellion was necessary; also that applicants should have been distinguished for capacity and good conduct.

Another enactment considerably affecting the composition of the regiment, and which, because its requirements have been so enlarged by recent legislation as to embrace nearly the entire commissioned force of the regular army, may be deemed of particular interest, is that referring to the examination of officers prior to appointment. It directed that no person should be commissioned in any of the regiments authorized by the Act, until he had passed a satisfactory examination before a board to be composed of officers of the arm of the service in which the applicant was to serve. This board was to be convened by the Secretary of War, and was to inquire into the service rendered during the war by the applicant, as well as into his capacity and qualifications for a commission in the regular forces. Appointments were to be made without reference to previous rank but solely by a consideration of present qualifications and past meritorious services.

On August 3, 1866, Major General Philip H. Sheridan, then commanding the Military Division of the Gulf, at New Orleans, Louisiana, was authorized to raise, among others, one regiment of colored cavalry to be designated the 9th Regiment of U. S. Cavalry, which was to be enlisted within the limits of his own command. Men serving in volunteer colored regiments who desired to enlist in regular regiments were authorized to be discharged from the volunteer organizations. This class of men was desired

and many took advantage of the opportunity to join the regular service, and later proved of some value as non-commissioned officers.

The mustering officer at New Orleans was directed to take temporary charge of the recruiting, and shortly afterwards it was transferred to Major Francis Moore, 65th U. S. Colored Infantry. The men obtained by Major Moore formed the nucleus of the enlisted strength, and were principally obtained from New Orleans and its vicinity. A little later in the autumn recruiting was established in Kentucky, and all the men for the new regiment were obtained from that State and Louisiana. The horses were obtained at St. Louis, and proved to be an excellent mount.

About the middle of September all recruits were assembled in New Orleans, and preparations made for organization. Empty cotton presses were used as barracks and the ration was cooked over open fires. In the latter part of September an epidemic of cholera caused the camp to be moved to Greenville, and later, for other reasons, it was moved to Carrollton, both of which places are suburbs of New Orleans.

During the winter of 1866–67, every effort was made to bring about an efficient state of drill, discipline and organization. The orders regarding stables and the performance of that duty were especially strict. Few officers had as yet joined, and the number on duty with the regiment was so small, that a scheme of squadron organization was resorted to so that at least one officer might be present with each squadron for every drill or other duty. The entire enlisted strength was woefully ignorant, entirely helpless, and though willing enough to learn, was difficult to teach. By assiduous labor and constant drilling much headway was made, however, and by the end of March, 1867, a change of station was determined upon. The middle of this month found the regiment with nearly its full strength, the return at that time showing a total of 885 enlisted men, or an average of over 70 to a troop.

The regiment, now practically organized yet still far from being in anything approaching a perfected state, was ordered to proceed to San Antonio, where it arrived early in April and formed a camp of instruction. Troops L and M, however, proceeded direct to take station at Brownsville, Texas, near the mouth of the Rio Grande, where they remained several years. This command was under 1st Lieutenant J. M. Hamilton (now a major of the 1st Cavalry), then an officer in the 9th U. S. Colored Infantry, he being one of a number of volunteer officers who had been temporarily continued in their volunteer commissions for the purpose of assisting in the organization of the new regiments until the arrival of the regularly appointed officers. Upon these officers much heavy work fell during the winter of 1866–67, as the regular officers arrived slowly until after the camp at San Antonio was established, when they began to report rapidly.

The camp near San Antonio was continued for some three months, and the time spent there was profitably employed in completing and perfecting the organization and drill, already well under way from the efforts of the preceding winter. The officers of the regiment were now nearly all appointed, and during the summer of 1867 they were as follows:

Colonel Edward Hatch.

Lieutenant-Colonel Wesley Merritt.

Majors James F. Wade, George A. Forsyth, and Albert P. Morrow.

Chaplain John C. Jocobi.

Captains J. S. Brisbin, Wm. Bayard, G. A. Purington, J. M. Bacon, G. H. Gamble, Henry Carroll, A. E. Hooker, W. T. Frohock, J. C. De Gress, T. A. Boice, F. S. Dodge, and E. M. Heyl.

First Lieutenants Michael Cooney, I. F. Moffatt, J. G. Birney, Charles Parker, J. L. Humfreville, Francis Moore, F. W. Smith, L. H. Rucker, Byron Dawson, J. S. Loud, Patrick Cusack, F. S. Davidson, D. H. Cortelyou, G. B. Bosworth, and W. B. Brunton.

Second Lieutenants I. W. Trask, F. R. Vincent, I. M. Starr, F. P. Gross, E. D. Dimmick, W. W. Tyler, G. W. Budd, T. C. Barden, and J. C. Edgar.

It is difficult now-a-days fully to appreciate all the work and labor devolving upon the officers in those early days. The men knew nothing, and the non-commissioned officers but little more. From the very circumstances of their preceding life it could not be otherwise. They had no independence, no self-reliance, not a thought except for the present, and were filled with superstition. To make soldiers of such material was, at that time, considered more of an experiment than as a fixed principle. The Government depended upon the officers of those early days to solve the problem of the colored soldier.

The colonel of the regiment was Edward Hatch, a young man full of energy and enthusiasm. He went right manfully to work, determined to succeed, and in this he was ably seconded by his officers. They were all equally enthusiastic in proving the wisdom of the experiment of colored soldiers, and in forcing the issue to a successful solution were compelled, not only to attend to the duties that naturally attach to the office of a troop commander and his lieutenants, but, in the endeavor to make finished individual soldiers of the negro and to feel that the troop, taken as a unit, was an independent fighting force, well drilled, well clothed, well fed, suitably armed and equipped, and thoroughly able to take care of itself in garrison or campaign, they were forced to enter into the minutest details of military administration, and personally to assume nearly all the duties of the non-commissioned officer. For some years the latter, from lack of education, were such only in name, and the process of moulding them into a responsible and self-reliant class was a slow one. Troop officers were in fact squad commanders, and it took both time and patience to teach the men how to care for themselves.

The amount of writing devolving upon officers during the earlier years of the regiment is not to be passed over lightly. Fully to appreciate this, it must be borne in mind that the enlisted men were totally uneducated; few indeed could read and scarcely any were able to write even their own names. It is related that but one man in the entire regiment was found able to write sufficiently well to act as sergeant-major. It was not an uncommon thing for a captain to assist his first sergeant in calling the roll, and every record, from the morning report to the monthly return, was prepared by an officer. In time the simpler reports were mastered, but it is only in later years that troop clerks are found, and even now considerable

difficulty is experienced at times in finding reliable men of sufficient education to conduct properly the routine clerical work pertaining to a troop.

Early in June the regiment was ordered into western and southwestern Texas to assist in opening up once more that vast territory, extending from Fort Clark to El Paso, and from the Rio Grande to the Concho. By this time the regiment was deemed sufficiently well organized, equipped and disciplined, to be sent to the extreme frontier, and capable of undergoing the long and trying march into the wild and unsettled country that lay before it.

The regiment was distributed as follows: Headquarters and Troops A, B, E and K, General Hatch commanding, at Fort Stockton; Troops C, D, F, G, H and I, Lieutenant Colonel Merritt commanding, at Fort Davis. Troops L and M had previously been sent to Brownsville.

The principal duty of the command in western Texas was to open up and protect the mail and stage route from San Antonio to El Paso; to establish law and order in the country contiguous to the Rio Grande frontier, which had been sadly interfered with by Mexicans as well as Indians during the Civil War; to prevent marauding by Indians and to capture and confine to their reservations all roving bands; in fact, to help pave the way for the western advance of civilization, and to add their part in the great work of opening to settlement the vast resources of the great West.

Having landed the regiment in this far away part of the country, a word or two of every-day garrison life during those early days, when the nearest railroad was six hundred miles distant, may be of interest. In many respects the every-day life of the men in garrison was similar to that of the present time. There was the same drill, stables and parade; the amount and kind of fatigue bore a strong resemblance to that of to-day; there were logging teams for the saw-mill and special details for the garden; men mixing mud for adobes and burnishing brasses for orderly; but guard duty, though no more tedious than now, was spiced with an element of danger which added zest to the duty. Strict orders prohibited all persons from leaving the immediate limits of a garrison, except in small parties, and they were enjoined always to carry their carbines. Heavy herd guards were detailed, and lookouts were posted on high ground during grazing hours.

The appliances for the personal comfort of the soldiers were few, and should the improvements now surrounding them be suddenly exchanged for what they had then, there would be such a skurrying off of recruits that I doubt if the whole State of Kentucky could furnish satisfactory material to fill the depleted ranks. Ashen slats on bunk irons and a bedsack filled with straw made a very good bed for its fortunate possessor, while the less favored ones were often at their wits' end to improvise a comfortable resting place out of two blankets. Sheets, pillows, white shirts, linen collars and barrack shoes, were not dreamed of, and bath tubs were unknown, for the water system was limited to a huge tank on wheels, with eight mules and a surly driver.

The stomachs of the men, even more than their bodies, were subject to a Spartan simplicity, and the numerous delicacies now supplied them could not then be found on officers' tables. The commissary kept only the com-

ponent parts of the regular ration, and the pound of fresh vegetables was not a part of it.

The banishment from the gentler influences of settled communities and separation from the varied society of large cities was keenly felt by officers, and the exiles' life they were forced to lead caused a few to give up in disgust and resign; but the majority continued in service, fighting bravely against the hardships surrounding them. Of luxuries they had none, of comforts, few; but the canvas homes and outdoor life furnished good digestions and hearty appetites for the limited bills of fare presented at the mess. Nearly all were bachelors, with the careless habits this class of army officers are noted for, though the presence of an occasional lady served to check in part the familiarity engendered by lack of privacy and constant association, —serious objections to any long continued camp.

Horse-back riding on pleasant days was almost the only outdoor amusement, but the danger from Indians so contracted the safety limits, that all ground was soon visited, and only the hope of a shot at a stray wolf or coyote, or the rare advent of some visitor to be entertained, kept up interest in this kind of outing. A great event was the distribution of the mail, and whether weekly, semi-weekly, or daily, the hour of its arrival was looked forward to by all, and, as the cloud of dust in the distance heralded its approach, the entire garrison, from the commanding officer to the latest recruit, hastened to the post office where they formed an eager crowd, anxious for the latest news from the States, or in happy anticipation of the expected letter from sweetheart, wife or mother.

The regiment remained in Texas for eight years, spending the greater portion of the time in the field, patrolling the vast stretches of prairie in innumerable scouts after depredating Indians, and gradually freeing the country from this scourge of settlers. There is not space to describe minutely even the more important of these expeditions, and I shall only summarize the following:

1867.

October 1, near Howard's Wells, Texas, two men killed while escorting the mail; December 5, Eagle Springs, Texas, one man killed; December 26, Camp Lancaster, Texas, Troop K persistently attacked for two days by a large force of Indians who were finally driven off, three men killed.

1868.

January, Fort Quitman, Troop F attacked sixteen times by a large band; August, Fort Quitman, Troop H attacked, Indians driven off without loss; September 12, Horsehead Hills, Texas, Lieutenant Cusack with 60 men surprised a large party of Indians, killing 25 and capturing all their horses, ponies and supplies. But one man was wounded in this affair, which was reported as a very brilliant and successful coup against the wandering bands.

1869.

June 5, Johnson's River, Texas, Troop L, no loss; June 7, on Pecos River, Texas, 32 men of Troop G under Captain Bacon; September 15, on the Brazos River, Troops F and M under Captain Carroll, had a skirmish, and

again on the 20th and 21st, the same command being augmented by detachments from Troops B and M, engaged the same band of Indians; October 28 and 29, Troops B, E, F, G, L and M had a running fight of 40 miles at the head waters of the Brazos River, killing a number of Indians. This is the affair to which the late General Sherman so often referred with his quizzical inquiry as to which way Bacon ran; November 29, head of Llanos River, Texas, Troops L and M under Captain E. M. Heyl had a desperate fight and this officer was seriously wounded; December 25, five men of Troop E defeated a band of 20 Indians which attempted to surprise the mail coach.

1870.

January 6, Guadaloupe Mountains, Texas, Troop H; January 11, Lower Pecos River, Troop L; January 16, Troop G and detachment of L, under Captain Bacon, surprised an entire village, capturing 83 head of stock and all supplies; January 21, a command of Troops C, D, I and K, under Captain Dodge engaged in a skirmish in the Guadaloupe Mountains; April 3, 15 men of Troop H, under a non-commissioned officer, ran into some Indians near San Martin's Springs, killing one; April 25, Crow Springs, Texas, 50 men from Troops C and K, under Major Morrow, captured 30 horses and the supplies of a village; May 19 and 20, at Kickapoo Springs, Texas, Sergeant Emanuel Stance with five men of Troop F, surprised and attacked a small village, wounding four Indians and capturing two white boy prisoners and 15 horses; May 29, Bosaler Cañon, Texas, Troop I.

1872.

April 20, Howard's Wells, Troops A and H, Lieutenant Vincent killed.

I have only mentioned the affairs in which an actual engagement took place. The many scouts, long marches, the weeks and months spent in campaign are omitted, but during the eight years of duty in Texas, as well as afterwards and until the regiment was sent to the Department of the Platte, more time was spent in campaign than in garrison, and the troops covered thousands of square miles of territory.

In the latter part of 1875 the regiment was transferred into New Mexico, with headquarters at Santa Fé, and the troops scattered all over that territory and even beyond. The general duty was about the same as in Texas, and during the time the regiment remained there, various troops and detachments were employed in capturing and returning to their reservations innumerable roving bands of the wily and treacherous Apache tribes, the more important of which were those headed by Nana and Victoria. During the five years spent in this section the more important affairs were as follows:

1876.

April 15, in the Florida Mountains, Troop F, one Indian killed and 11 horses captured; September 2, in the Cuchillo Negro Mountains, detachment of Troops C and E, under Lieutenant Wright, small camp captured and number of lodges destroyed.

1877.

January 23, Florida Mountains, nine men under Lieutenant Wright killed

5 Indians and captured 6 horses; January 28, Sierra Boca Grande Mountains, Mexico, detachments of Troops C and A captured a small camp.

1878.

August 6, Dog Cañon, N. M., Troop H was engaged.

1879.

January 15, Troop A under Lieutenant Day, was engaged and captured a number of horses and mules; March 8, Ojo Caliente, Troop I; May 28, in the Black Range, Troops C and I under Captain Beyer captured a camp and 16 horses, losing one man killed and 2 wounded; September 4, Ojo Caliente, four men were killed; September 8, West Las Animas River, 24 men of Troop G under Lieutenant Hugo were engaged losing one man; September 18, Las Animas River, Troops A, B and C, one man killed and 2 wounded; September 29 and 30, on the Cuchillo Negro River, parts of Troops B, C, E and L, under Major Morrow, 2 men killed; October 2 and 3, at Milk River, Colorado, Troop D went to the relief of Thornburg's command and succeeded in reaching it, losing all its horses; October 27, in the Guzman Mountains, Mexico, Troops B, C, G and H, under Major Morrow were engaged, losing one man and one scout.

1880.

January 12, on the Rio Percho, Troops B, C, D, F, H and M, under Major Morrow, were again engaged, losing one man; January 17, in the San Mateo Mountains, Troops B, C, F, H and M, under Major Morrow, were again engaged, losing one officer (Lieutenant French) killed, and one man wounded; January 30, in Caballo Mountains, detachment of Troops B and M, under Captain Rucker, loss 3 men wounded; February 3, in the San Andreas Mountains, Troops B, C, F, H and M, under Major Morrow, were engaged, losing 4 men wounded; February 28, and again on April 5, in the San Andreas Mountains, Lieutenant Conline with Troop A was engaged, losing one man and one citizen wounded; April 6, in the same mountains, Troops A, D, F and G, under Captain Carroll, were engaged, Captain Carroll and 6 men being severely wounded; April 7, Major Morrow with Troops H and L continued this affair; May 14, near old Fort Tolerosa, Sergeant Jordan with 25 men repulsed a force of more than a hundred Indians under Victoria; June 5, Cook's Cañon, Troop L, loss 2 men; May, in the San Francisco Mountains, Troop C and detachment scouts, 2 men killed and one wounded; June 11 and 12, near Fort Cummings, Troop B; September 1, in the Sacramento Mountains, 11 men of Troop G, 2 men wounded.

1881.

In February and again in April, a detachment under Lieutenant Maney, 15th Infantry, was engaged in southern New Mexico, one man wounded; July 25 at White Sands, July 26 in the San Andreas, and August 3 at Santa Minica, 20 men of Troop L were engaged.

In August there were a number of engagements:—In Carizo Cañon, 19 men of Troop K, under Captain Parker, 2 men killed; in the San Mateo Mountains, detachments of Troops B and H, under Lieutenant Taylor; in

Cuchillo Negro Mountains, Troop I, Lieutenant Valois, 2 men wounded; in Cavilare Pass, detachment of Troops B and H, Lieutenant Smith, 3 men and one citizen killed, 3 men wounded.

October 4, in the Dragoon Mountains, Troops F and H, 3 men wounded.

1887.

November 5, Crow Agency, Montana, Troops D and H.

1890.

December 30, Troop D, under Captain Loud, was attacked while escorting a wagon train near Pine Ridge Agency, South Dakota, losing one man killed. Later in the same day Troops D, F, I and K, under Major Henry, were engaged near the Drexel Mission, S. D., no casualties.

In June, 1881, the regiment was moved from New Mexico to Kansas and Indian Territory, where it remained until 1885. Most of these years were spent in garrison, though the intruders upon the Oklahoma Territory which at that time was not open for settlement, kept a number of troops busy moving over that country and patrolling the northern portion of Indian Territory and southern Kansas.

In the summer of 1885 the regiment was moved to the Department of the Platte, where it has since remained enjoying a well-earned rest after the many scouts and campaigns of the preceding eighteen years. The only campaign worthy of mention is that of 1890–91, during the uprising of the Sioux, when the regiment was the first in the field in November, and the last to leave late in the following March, after spending the winter, the latter part of which was terrible in its severity, under canvas.

At present (February, 1895) the regiment is commanded by Colonel James Biddle and eight troops garrison the post of Fort Robinson, Neb. Troops B and F, under Major Randlett, are at Fort Duchesne, Utah; while Troops L and M are continued with a skeleton organization.

Every effort is made to keep the regiment in a high state of efficiency, and with nearly all its officers present for duty,—with the ranks filled to the authorized strength,—with an excellent and ample mount,—the Ninth Cavalry stands ready to-day for any service it may be called upon to perform, filled with a just pride in its past achievements and anxious again to seek "the bubble reputation even in the cannon's mouth."

THE THIRD REGIMENT OF INFANTRY.*

By Lieutenant J. H. McRAE, 3d U. S. Infantry.

THE Third United States Infantry first came into being under the Act of March 5, 1792, an act for making farther and more effectual provisions for the protection of the frontiers of the United States, and which, among other things, provided for the raising of three additional regiments of infantry, also for the completion of the battalion of artillery and two regiments of infantry already in the service. Under the provisions of Section 3 of the above named act, the Third Infantry was, by direction of President Washington, organized as the infantry of the Third Sub-legion.

In the reorganization of the army, November 1, 1796, under the Act of May 30, 1796, the infantry of the Third Sub-legion became the Third Regiment of Infantry, with Lieutenant-Colonel Henry Gaither as its first commandant.

From its organization till 1800 the regiment was stationed along the northwestern frontier. It accompanied General Anthony Wayne in his successful campaign against the Indians in 1794, during which the entire regiment was engaged in action against hostile Indians at Fort Recovery, Ohio, June 30, and again at the rapids of the Miami of Lake Erie, August 20, Lieutenant Robert Craig being killed in the former engagement. In 1800 the regiment was transferred to the Mississippi Territory with headquarters at Fort Adams.

Under the Act of March 16, 1802, the regiment was discharged on the first of the following June, and it remained out of service until its reorganization under the act of April 12, 1808, with Edward Pasteur as its first colonel. Colonel Pasteur resigned January 1, 1810, and was succeeded by Colonel William Dent Beall, promoted from the 5th Infantry. On the 24th of April, 1812, Joseph Constant of the Fifth Infantry became colonel of the Third by transfer. He resigned August 15, 1813, and was succeeded by Colonel Gilbert C. Russell.

From its reorganization till the War of 1812, the regiment was stationed at various posts throughout the southern Atlantic States, from which States it had been recruited. During the War of 1812 it was in the seventh Military District, the headquarters of which were at New Orleans. It participated in the campaign against the Creek Indians, which commenced with the massacre at Fort Mimms, August 30, 1813, followed by a general uprising of the Indians along the southwestern frontier, and ended with the bloody battle of Emucfau, or Horse Shoe Bend, March 25, 1814, where Jackson first distinguished himself as a military commander, and where the power of the great Creek nation was broken forever.

* An abridgment of Lieut. J. H. McRae's "History of the 3d Infantry."

A part of the regiment was with Jackson at the capture of Pensacola, Florida, November 7, 1814, and a part was with him later when the brilliant victory of New Orleans was won.

In the reorganization of the army under the Act of March 3, 1815, the Third was consolidated with the 2d, 7th, and 44th, to form the First Regiment of Infantry; and a new Third was formed by the consolidation of the 1st, 17th, 24th, 28th, and 30th regiments. The Third Infantry, therefore, includes the oldest organization in the United States Army,—the original First Infantry, which was organized under a resolve of Congress of June 3, 1784. Colonel John Miller of the 17th was retained as colonel of the Third, Colonel Russell being honorably discharged. Lieutenant-Colonel Matthew Arbuckle, 3d Infantry, remained as lieutenant-colonel under the new organization, and Major Charles K. Gardner, the author of the designation of companies by the first letters of the alphabet, became major of the regiment. Major Gardner was succeeded the following year by Major Zachary Taylor, who was reinstated as major of the Third Infantry, having been honorably discharged at the time of the reorganization. He was promoted to the 4th Infantry April 20, 1819.

For the next eleven years the regiment was stationed along the Great Lakes and vicinity, garrisoning at different times the posts of Detroit, Mackinac, Forts Howard, Dearborn, Knox, Harrison, Wayne, Crawford, etc. The headquarters were at Detroit from 1815 till 1821, when they were transferred to Fort Howard, remaining at the latter place until the summer of 1826.

Upon the resignation of Colonel Miller, February 10, 1818, Lieutenant-Colonel Joseph Lee Smith, 3d Infantry, became colonel of the regiment, and remained in command until the reorganization of the army in June, 1821, when he was honorably discharged and Colonel Ninian Pinkney became colonel of the Third in his place.

In 1826 the regiment was transferred to Missouri, and in September was at "Camp Miller," where it assisted in the construction of a new post which subsequently was named Jefferson Barracks. In the spring of 1827 Colonel Leavenworth (who had succeeded Colonel Pinkney upon the death of the latter in December, 1825), with Companies B, D, E and H, selected the present site of Fort Leavenworth, and in April of the following year the entire regiment, except Companies C and G at Fort Armstrong, was concentrated at Cantonment Leavenworth, but in the spring of 1829 returned to Jefferson Barracks.

Companies E and K, under Captain Lewis, left Jefferson Barracks November 26, and arrived at camp on Black Creek, Choctaw Nation, December 31. Companies A, C, G and I, forming the first battalion, under Major S. W. Kearny, left Jefferson Barracks, December 14, 1830, for service in the Choctaw Nation, and arrived at Natchitoches, on the Red River, where it went into camp, on the 31st. In November, 1831, this battalion took station at Cantonment Towson, Choctaw Nation, near the southeast corner of what is now the Indian Territory. In September of that year the field and staff, with Companies B, D, F and H, were transferred from Jefferson Barracks to Cantonment Jesup, La., where the headquarters of the regiment

were established and remained, except for a few short intervals, until ordered to Florida in the fall of 1840.

General Orders of February 12, 1834, placed Colonel Leavenworth in command of the Left Wing, Western Department, and while on an expedition in what is now the Indian Territory, he died at "Cross Timbers," 120 miles west of Fort Towson, on the 21st of July following.

He was succeeded by Colonel James Many, who joined at Fort Jesup and assumed command of the regiment January 3, 1835. Colonel Many remained colonel of the regiment, though unqualified by age and physical disability for active service, until his death, February 3, 1852, when he was succeeded by Colonel Thomas Staniford, promoted from the Eighth. Colonel Staniford never joined, and upon his death just three years later, he was succeeded by Colonel Benjamin L. E. Bonneville, whose adventures are made famous by Irving, promoted from the Fourth Infantry. Colonel Bonneville joined the following December and assumed command of the regiment, which he retained until his retirement, September 9, 1861.

In the spring of 1837 Companies B and E, under Brevet Major Belknap, were detached from the garrison of Fort Jesup to the Sabine River for the purpose of opening it up to steamboat navigation from Cook's Ferry to its mouth, a distance of about 300 miles. The two companies first formed a camp for the purpose of building boats by which means to descend and improve the course of the river, opposite Sabine Town, Texas. Starting on the downward course September 23, when the river was about at its lowest, the work of removing snags and overhanging trees was commenced and progressed from day to day until the "Raft," or great jam of logs, was encountered nearly half way from Cook's Ferry to the head of Sabine Bay. This was an almost solid mass of surface and sunken timber completely blocking the river from bank to bank. The work of cutting out a practicable channel through the obstructing mass was finally effected through the incessant labor of two weeks, and upon arriving at the mouth of the river the command crossed Sabine Bay to a point on the Louisiana side, where it arrived and went into camp November 27. The companies remained there until the following summer when they returned to Fort Jesup.

Having been ordered to join the army in Florida the entire regiment was, during the month of October, 1840, en route to Fort Brooke, Tampa Bay, via New Orleans, and by November 20 was concentrated at Fort Brooke, Major Wilson commanding, Colonel Many being on sick leave and Lieutenant-Colonel Vose on detached service as superintendent of the general recruiting service.

For the next two and a half years the regiment bore its full share of the hardships and arduous duties incident to the Florida War. From Fort Brooke the companies were dispersed to numerous detached posts and camps throughout middle and west Florida and along the Georgia border, constantly engaged the year round, patrolling and scouting the surrounding country and swamps in search of, and to protect settlers against, small bands of marauding Indians. Major Wilson commanded the regiment and the Western District until relieved by Colonel Vose, November 22, 1841, who continued in command until March 29 of the following year, when,

having been promoted to the 4th Infantry, he was in turn relieved by Major Wilson. The latter having been promoted to the First Infantry, was relieved in command July 25, 1842, by Captain Clark, the senior officer present. Lieutenant-Colonel Hitchcock joined and assumed command of Fort Stansbury and the Western District on the 12th, and of the regiment on the 29th of October, which command he retained during the remainder of the war.

After the pacification of August 14, 1842, the troops remaining in Florida (the Third and Eighth Regiments of Infantry and six companies of the Fourth) were concentrated, detached camps being drawn in and a number of posts abandoned. The headquarters of the Third were at Fort Stansbury, 12 miles from Tallahassee. The aggregate strength of the regiment at this time was 690 men. Three companies were stationed at Cantonment Morgan, Horse Key; and one company each at Forts Pleasants, Robert Gamble, Hamilton, Stansbury, Ocilla, and Brooke.

Although General Worth's order of August 14 announced that hostilities with the Indians had ceased, yet they were to be carefully watched by the military, and those who violated their treaty agreements to be secured if possible and removed to their new home in Arkansas. Tiger Tail, the most noted chief remaining in Florida, and who had been the principal instrument in protracting the war three years, disregarding his promise to move south to the allotted reservation, was surprised and captured in his camp by Lieutenant T. Jordan, 3d Infantry, with a detachment of 20 men.

A band of Creeks under the chief Pascoffer, on the Ocklockonnee River, was causing much apprehension along the border of West Florida. Lieutenant-Colonel Hitchcock, commanding Third Infantry, stationed at Fort Stansbury, was ordered to besiege the country by land and water, with boats, mounted men and foot men. These operations, characterized by great skill and energy on Colonel Hitchcock's part, seconded by the zealous exertions of the officers of the regiment, resulted in the surrender of Pascoffer and his band of 51 souls (29 warriors) January 9, 1843. By this capture middle and west Florida were relieved entirely of Indians, and the whole territory of the most inveterate of her foes.

Peace being at last restored to Florida, the regular force remaining in the Territory was reduced to one regiment—the Eighth Infantry, and the Third was sent to Jefferson Barracks, where it arrived and reëstablished the regimental headquarters on the 22d of April, 1843. During the regiment's service in Florida it had lost three men killed, and three officers and 65 men who died of disease.

In the summer of 1843 the eight companies of the regiment stationed at Jefferson Barracks (K and I having been detached to Fort Leavenworth shortly after the return of the regiment from Florida) and eight companies of the Fourth, were formed into a school for brigade drill under Colonel Kearny, and so thoroughly were they drilled and disciplined during the summer and fall of 1843, and the winter of 1843-44, that they gained a reputation throughout the service which placed them in the forefront of the army.

In the spring of 1844 the entire regiment was transferred to Camp Wil-

kins, near Fort Jesup, and with the Fourth Infantry at Camp Salubrity and seven companies of the Second Dragoons at Fort Jesup, became the "Army of Observation" under General Zachary Taylor. During the summer of 1845 the regiment was transferred to Corpus Christi, Texas, where it arrived in the early part of August, and with the 4th, 5th, 7th, and 8th Regiments of Infantry, seven companies of the Second Dragoons, four batteries of light artillery, and one regiment of heavy artillery serving as infantry,—about 3000 in all,—became the "Army of Observation of Texas," still under the command of General Taylor.

The regiment remained in camp at Corpus Christi until March 11, 1846, when, as part of the Third Brigade, it took up the march for the Rio Grande with Captain Lewis N. Morris in command. Lieutenant-Colonel Hitchcock was absent sick, and did not afterwards serve with the regiment during the war, but was on General Scott's staff as inspector general of the army, during the campaign from Vera Cruz to the City of Mexico. Arriving at the Rio Grande on the 29th at a point directly opposite the city of Matamoras, the regiment went into camp, where it furnished its daily quota of officers and men for duty in the construction of the field work afterwards called Fort Brown.

On the 1st of May, the work being sufficiently advanced, the commanding general made a movement towards the coast for the purpose of establishing a base of supplies. The Third Infantry, forming a part of the command, arrived at Point Isabel on the 2d, and remained there until the afternoon of the 7th, at which time the army commenced its march for its former position opposite Matamoras. The regiment was engaged in the actions of Palo Alto and Resaca de la Palma on the 8th and 9th of May, in the latter warmly, but it fortunately escaped with but little loss, the sergeant major and one private being killed, and one officer and six enlisted men wounded. The regiment, with one company of the Second Dragoons and one battery of artillery, was ordered to pursue the enemy after Resaca de la Palma, which it did with vigor, halting only on the bank of the Rio Grande, where it bivouacked for the night and where it remained until the 11th when it moved to the old camp opposite Matamoras.

Major Lear joined from sick leave on the 16th and assumed command of the regiment. Crossing the river on the 18th the regiment remained in camp near Matamoras until the movement upon Monterey commenced in July. While in camp at Matamoras Companies A, B, E and G, having the smallest number of officers present, were temporarily broken up, the privates being transferred to other companies and the officers, non-commissioned officers and musicians sent on recruiting service. Company A was afterwards reorganized at Vera Cruz, when D was broken up and the men transferred to A. Companies B, D and E, were reorganized and joined the headquarters of the regiment at Puebla in August, 1847. Company G was reorganized at Governor's Island the following year and joined at Puebla on the regiment's return march from the City of Mexico.

In the latter part of July the Third, brigaded with the Fourth with Colonel Garland as brigade commander, commenced the advance into the interior. Marching first to Camargo, thence to Monterey, it was warmly engaged in

the actions which ensued on the 21st, 22d, and 23d of September. On the 21st the regiment formed part of the assaulting column upon the eastern defenses of the city, which were gallantly carried, with a loss, however, to the regiment of six of its most gallant and valuable officers and 16 men killed; and one officer (Captain Bainbridge) and 29 men wounded,—a total loss of 52 out of an effective strength of 14 officers and 248 men. The following named officers were killed: Captains L. N. Morris, P. N. Barbour, and G. P. Field, and Lieutenants D. S. Irwin and Robert Hazlitt. The last named was killed while fearlessly exposing himself in attempting to place his mortally wounded commanding officer under cover. Major Lear died October 31 of the wounds then received. Upon the death of Major Lear the command of the regiment devolved upon Captain Bainbridge, who, upon his promotion to the 7th Infantry in the following February, was succeeded by Captain E. B. Alexander who retained the command until the close of the war.

After the surrender of Monterey on the 24th September the regiment was encamped at Walnut Springs, about four miles from the city, where it remained until the 13th of December, when it, together with most of the regular troops under General Taylor, took up the line of march for Tampico, en route to Vera Cruz. At Tampico the troops embarked for the general rendezvous at Lobos Island, thence to Vera Cruz, where they landed March 9, 1847, and the regiment took part in the siege of the place which followed.

After the capture of Vera Cruz, General Scott's army was detained a month awaiting transportation, and then began that brilliant and wonderful march to the City of Mexico, during which there was not even a skirmish in which our troops were not victorious, and always against greatly superior numbers (sometimes three to one) posted in strong works and natural defenses. The Third Infantry was still in Smith's Brigade, Twiggs' Division, which was the first to leave Vera Cruz, taking up the line of march April 8, 1847.

The enemy was first discovered strongly posted on the heights of Cerro Gordo, the first high spur of mountain met with on the national road from Vera Cruz to the City of Mexico. In the battle of April 18, the regiment was commanded by Captain Alexander, and with the 7th Infantry and 1st Artillery, under Colonel Harney, 2d Dragoons (General Smith being sick), formed the assaulting column to carry the heights of Telegrafo, the key-point of the enemy's position, which was crowned with artillery and strengthened with palisades and breastworks. This strong and important position was carried by a brilliant charge—the Seventh on the right, the Third on the left, and the First Artillery in rear as support. General Scott makes special mention of this charge in his report of the battle. After explaining the great importance of carrying the position and naming the troops detached for the purpose, he says:

"The style of execution, which I had the pleasure to witness, was most brilliant and decisive. The brigade ascended the long and difficult slope of Cerro Gordo, without shelter and under tremendous fire of artillery and musketry, with the utmost steadiness, reaching the breastworks drove the enemy from them, planted the colors of the First Artillery, Third and

Seventh Infantry, the enemy's flag still flying, and after some minutes of sharp firing finished the conquest with the bayonet. It is a most pleasing duty to say that the highest praise is due to Harney, Childs, Plympton, Loring, Alexander, their gallant officers and men, for this brilliant service, independent of the great results which followed."

The Telegrafo being captured there was but a feeble and brief resistance offered at other points. Our army gained a most complete and decisive victory. The Third formed part of the pursuing column, which so hotly pressed the retreating army that nearly the whole of it was dispersed and disorganized. The losses of the regiment in this battle were 9 men killed or mortally wounded; and two officers (Lieutenants Ward and Bee) and 24 men wounded.

The victorious army now moved on to Jalapa and from there to Puebla. As the time of about 4000 of General Scott's volunteers had expired, the army was delayed here until August before sufficient reinforcements were received to warrant an advance. The onward movement from Puebla commenced August 7, with Twiggs' Division, to which the Third still belonged, again in advance, it being a rule with General Scott that one of the two regular divisions should always be in front.

From Puebla to the City of Mexico is about 160 miles, and the army, having crossed the Rio Frio Mountains without opposition, descended into the basin in which the city is situated and arrived at Ayotla August 11, at which place and along Lake Chalco, the army was concentrated preparatory to an advance upon the City of Mexico.

The Third Infantry, still under Captain Alexander and in Smith's Brigade,—which was temporarily commanded by Major Dimick, 1st Artillery, General Smith being in command of all the forces which made the attack,—was warmly engaged and took a gallant and important part in the battle of August 19th and 20th, the first of those remarkable battles around and in view of the City of Mexico, and which resulted in the capture on the morning of the 20th of the important position of El Pedregal, or Contreras.

On the afternoon of the same day—August 20—the most severe of all the battles fought in the basin of Mexico took place at the hamlet of Churubusco, which contained a fortified convent and a strong field work at the head of the bridge over which the causeway to the capital passed. Immediately after the victory of Contreras General Scott moved his little army, confident of another victory, against these strong works held by at least three times his numbers, the whole remaining force of Mexico being assembled in or in supporting distance of them, with the determination to make a last desperate stand to save their beloved capital. To Twiggs' Division was given the capture of the citadel of the works, the strongly fortified convent, and in the assault which followed the ever gallant "Buff Sticks"* played the most conspicuous part. That part is best told in General Scott's own words. In his report of the battle he says:

"Finally, twenty minutes after the tête de pont had been carried by

* A designation by which the regiment was universally known on account of its clean, soldierly appearance at all times.

Worth and Pillow, and at the end of a desperate conflict of two hours and a half, the church or convent—the citadel of the strong line of defense along the rivulet of Churubusco—yielded to Twiggs' Division and threw out on all sides signals of surrender. The white flags, however, were not exhibited until the moment when the Third Infantry, under Captain Alexander, had cleared the way by fire and bayonet and had entered the work. Captains J. M. Smith and O. L. Shepherd, both of that regiment, with their companies had the glory of leading the assault. The former received the surrender and Captain Alexander instantly hung out from the balcony the colors of the gallant Third."

The following extract is from the report of the Mexican officer in command:

"The first to present himself upon the parapet was the valiant Captain James M. Smith of the Third Infantry, who gave an example of valor to many following him; and no less magnanimous than daring, scarcely had he ascertained that now, on our part, no resistance was made, than he showed a white flag."

The losses of the regiment at Contreras and Churubusco were six men killed; one missing; and three officers (Captains Craig and Chandler, and Lieutenant Buell) and 26 men wounded.

After their defeats at Contreras and Churubusco, and after losing in killed and prisoners a number equal to our entire army, and treble as much ordnance as our army had in its siege train and field batteries, the enemy fell back to the very gates of the city. Pending negotiations for peace between the two governments an armistice was agreed upon, which went into effect August 23, and our army went into cantonment in the neighboring villages along the slopes of the mountains to the south of the city. The Mexicans were so enraged by the ultimatum given by our government on the 2d of September, that they immediately commenced to strengthen their defenses, in violation of the terms of truce, whereupon General Scott declared the armistice at an end and commenced preparations to enter the capital, resulting in the battles of Molino del Rey, Chapultepec, and Mexico, on the 8th, 13th and 14th days of September, respectively.

General Smith's Brigade having been left at San Angel as a reserve and as a guard to the general depot, the Third did not participate in the capture of Molino del Rey, but was actively and gallantly engaged in the other battles. On the 12th Companies D and I were detached to support the battery engaged in bombarding the Mexican fortifications at the Garita Ninio, Perdido. On the same evening a selected party of three officers and 57 men was detached to form a part of the storming party of regular troops against the fortress of Chapultepec. On the morning of the 13th the main body of the regiment (Companies D and I having not yet joined) moved forward to support the attack upon that strong fortress, Smith's Brigade having reinforced Quitman's Division and forming the right of the column. Chapultepec was carried about 9.30 A. M. on the 13th, and the regiment then pushed forward in pursuit of the retreating army, and participated in the taking of the different batteries along the Belên causeway leading into the city, particularly at the Garita de Belên, or southwest gate of the city, which

was taken with considerable loss, the troops being under both direct and flank fire from the strong fortress, called the *Citadel*, just within the gate, and from behind the stone pillars and arches of the aqueduct along the road. Here the regiment, Companies D and I having joined late in the afternoon, remained during the night. Worth's Division had pursued the enemy along the San Cosme causeway and had also entered the city by the San Cosme gate. These victories of the 13th of September closed the active operations of the war. Early on the morning of the 14th, the Third, which had so signally distinguished itself during this war, was among the first (Quitman's Division) who marched into the grand plaza of the city and hoisted the Stars and Stripes over the "Halls of the Montezumas."*

General Santa Anna had evacuated the city during the night, but before doing so had liberated some 2000 convicts, who, joined by about as many others—deserters and populace—caused considerable annoyance and casualty to the army when it entered the city, by firing upon it from house tops, etc. The Third was engaged during the greater part of the 14th in suppressing this outbreak, with severe loss to the regiment.

The losses of the regiment on the 13th and 14th of September were 12 killed or mortally wounded, and 48 wounded. During the whole war the regiment lost 52 (including six officers) killed, and 140 (including seven officers) wounded.†

The war was now over, but following the excitement of the recent battles and the capture of the city, irregular diet, etc., many men of the regiment fell sick and died. The returns show that from April till December, 1847, there were 120 deaths in the regiment from disease.

The army remained in and around the City of Mexico until the following June, when the treaty of peace having been ratified by the United States Senate, the evacuation commenced. The Third Infantry left the city on the morning of the 5th, and arrived at Vera Cruz July 3. Left Vera Cruz on the 9th on the ship *Masconomo*, and arrived at Camp Jefferson Davis, East Pascagoula, Miss., July 21, 1848.

In October and November Headquarters and Companies A, B, C, E, I and K, were transferred to Texas, taking station at Camp Salado, four miles from San Antonio; and Companies D, F, G and H, to Jefferson Barracks, where they remained until the following April when they were sent to Fort Leavenworth.

During the winter of 1848-49, while the Texas battalion under Brevet Major Van Horne was encamped on the Salado River, at about 1 o'clock on a quiet starlit morning the sentinel over the storehouse suddenly found himself walking in water. He gave the alarm and in an instant the hitherto peaceful camp was in a furore of excitement and terror, for as men, women and children tumbled out of bed, they found themselves in water. When

* There is a drum-major's baton now in possession of the regiment, presented to it by its old brigade commander, General Persifor F. Smith, the wooden portion of which is part of the flagstaff of the capitol building, or national palace, of Mexico, and the metal portion is made of Mexican silver

† Of the officers serving with the Third Infantry during the Mexican War, six afterwards became major generals of volunteers during the Civil War, and one a major general and one a brigadier general in the C. S. A.

the sun arose that morning the insignificant rill of the night before had become a sea of raging waters, in some places two or more miles in width. Every vestige of the camp was completely swept away by the force of the torrent, but such had been the promptness, efficiency and discipline of all concerned that only one life was lost, that of a non-commissioned officer of the regimental staff, supposed to have been drowned in his sleep. His body was never recovered. The regiment lost everything,—clothing, baggage, personal effects, private papers, etc., while the Government lost arms, ammunition, quartermaster and subsistence stores, everything except the horses and mules which had saved themselves and helped to save the women and children. The force of the flood was so great, that, with the exception of one armchest full of muskets found lodged in a drift in the Cibolo River, some 50 miles below the camp, nothing was ever recovered.

During the month of May, 1849, there were 35 deaths from cholera in the companies at Camp Salado and 11 in the battalion at Fort Leavenworth.

On the 1st of June, 1849, the six companies in Texas under Major Van Horne were sent to El Paso del Norte, arriving at camp five miles below El Paso September 8, a distance of about 670 miles. Companies D, F, G and H, under Brevet Lieutenant-Colonel Alexander (who was also commanding the regiment), left Fort Leavenworth about the middle of May for Santa Fé, where they arrived July 22. The entire regiment was now in New Mexico, headquarters and three companies being at Santa Fé; two companies at the post opposite El Paso; and the others scattered along the Rio Grande as far north as Taos, N. M.

The regiment remained in New Mexico until 1860, and the returns show the different companies to have been almost continuously on the march (while not engaged in building new posts) changing stations, escorting trains over hundreds of miles of trackless wilderness infested with hostile Indians, on exploring expeditions, scouts, and campaigns against Indians. The following is a list of the engagements with Indians, and some of the more important expeditions in which portions of the regiment took part during this time:

1849.

August 16 to September 26; expedition against Navajo Indians; Companies D, F, G and H. October 17 to November 12; expedition against Apache Indians; Company E.

1852.

February 6; engagement with Apaches near Fort Webster; Company K; three men killed. February 19 to March 31; expedition against Apaches on Gila River; Company B. June 6; Brevet Lieutenant-Colonel L. S. Craig was shot and killed by two deserters from Fort Yuma, while in command of the International Boundary Line Survey escort, of which his company (A) formed part.

1854.

April 6 to June 15; expedition against the Jicarilla Apaches; Company G. April 14 to May 11; scout into the White Mountains against Mescalero Apaches; Company C. June 18 to August 15; expedition against Mescalero

Apaches near head of Rio Yula; Companies A, E and I. June 30, Lieutenant J. E. Maxwell killed in action with Jicarilla Apaches near Moro River, 40 miles south of Fort Union, while in command of a detachment of the Second Dragoons.

1856.

March; expedition against Gila and Mogollan Apaches; Companies B and I, which marched between 500 and 600 miles during the month and engaged the enemy at Sierra Almagre on the 21st, and near Rio Meimbris on the 29th. March 20; engagement with Apaches, Fort Thorn; detachments of D, F and I.

1857.

January 31 to February 5; expedition to Cañon Medera against Apaches; Company I. April to September; expedition against the Gila and Mogollon Apaches, under Colonel Bonneville; Companies B, C, I and K and detachment of E, with following engagements:

May 24, Cañon de los Muertos Carneros, B and detachment E; June 2, Mogollon Mountains, C and detachment F; June 27, Gila River with Coyotero Apaches, C and detachments of F and K; one officer and three men wounded with arrows.

1858.

January 1 to February 11; scout against Kiowa Indians in neighborhood of Manzana; Company F. March to September; Mormon expedition into Utah; Companies A, E and F. May 30; engagement with Navajo Indians at Ewell's hay camp near Fort Defiance; detachments of B and G. September, October and November; campaign against Navajos; engagements:

September 19 to 24, Cañon de Chelly, Company G; September 25, Laguna Negra, Company B; October 1, Bear Springs, Company B; October 10, Ranchos de los Anagones, Company G; November 9, near Fort Defiance, Company F.

1859.

January 27 to February 5; scouts into the Pueblo Indian country near Zuni; Company B. July 18 to August 17; scout to Moqui villages and region south and west of Fort Defiance; Company K. August and September; scouts into the Navajo country; Companies C, D, E and K. November 1 to 12; campaign against Tuni-Cha Navajos; Companies B, C and G. November 14; engagement with Tuni-Cha Navajo Indians near Fort Defiance; detachments of B, C, E and G.

1860.

January 17; engagement with Navajos near Fort Defiance; detachments of B, C, E and G. January 18 to 22; engagements with Navajos near Fort Defiance and Sixteen Mile Pond; detachments of B, C, E, F and G. February 8; engagement with Navajos near Fort Defiance; detachments of B, C, E and G. April 5; engagement with Navajos near Fort Defiance; detachment of B. April 30; attack on Fort Defiance by Navajos;* Companies B, C and E.

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* For full account see "Reminiscences of Fort Defiance, N. M., 1860," published in No. 13, Vol. 4, JOURNAL OF THE MILITARY SERVICE INSTITUTION.

During the summer and fall of 1860 the regiment was transferred from the Department of New Mexico to that of Texas, where the companies were distributed as follows:—Headquarters and Companies B, D, G, H and K, at Fort Clark, Colonel Bonneville commanding; Companies A, C and E, at Ringgold Barracks, Lieutenant-Colonel Electus Backus commanding; Companies F and I at Fort McIntosh, Major C. C. Sibley commanding. These were the stations of the different companies at the close of the year 1860.

As the mighty war clouds which hovered over the country were then fast lowering, the regular troops stationed in Texas were ordered to evacuate that State by way of the coast. Headquarters and Companies B, D, G, H and K, under Brevet Major O. L. Shepherd (Colonel Bonneville on leave), left Fort Clark March 19, 1861, and arrived at Indianola on the 7th of April. The line of march took them through the city of San Antonio, just before reaching which instructions were received from Colonel Waite (who had relieved General Twiggs of the command of the Department), that, as there was some excitement among the citizens of the place, it would be well if the command marched around the city.

"However, the old regiment was not in the habit of sneaking around by the by-ways when the main road was open, and Major Shepherd called a council of the officers; the matter was laid before them, and without a dissenting voice it was determined that the trunks and boxes should be opened and full dress uniform gotten out and put on, band instruments unpacked, and the regimental flags removed from their cases; and that we should march through San Antonio with everything that we possessed flying, blowing and beating; so that for awhile everything was in confusion, and the leeward side of every wagon in the train became an extemporized dressing-room."

Thus they entered and passed through the town with "colors flying, band playing, and every man and officer as fine as brass and bullion could make him."*

At Indianola the command embarked for New York Harbor, where it arrived April 25.

Companies C and E had embarked for Fort Hamilton, N. Y. Harbor, the month before. From there they were sent to Fort Pickens, Florida, where they arrived April 16, and participated in the following engagements before joining the headquarters of the regiment the ensuing year: Santa Rosa Island, October 9; bombardment of Fort Pickens, November 22 and 23; Fort Barrancas, January 1; and Fort Pickens, May 9 to 12. The companies lost two men killed and seven wounded.

Companies A, F and I, less fortunate, were compelled to surrender to an overwhelming force of Confederates under Colonel Van Dorn, at Matagorda Bay, near Indianola, April 26, the men and officers being paroled until such time as they could be exchanged. They rejoined the headquarters of the regiment the following year, every enlisted man being reported "present or accounted for," although many had received tempting offers of commissions in the Confederate service.

The headquarters and battalion of five companies left Fort Hamilton

*Major Bell on the evacuation of Texas by the Third Infantry.

for Washington May 9, and in the early part of June the battalion was ordered to reinforce General Patterson's command. It went by rail to Carlisle, Pa., and marched to and forded the Potomac near Williamsport, making part of one day's march toward the enemy, when it was recalled to Washington, making a forced march while returning which rivalled—at least in the amount of fatigue it imposed—the famous retreat from Bull Run, the command being on their feet and marching for twenty hours out of twenty-four.

On the 4th of July the battalion was transferred from Washington to Arlington Heights where it remained until the 16th, when, with two companies of the Second and one of the Eighth Infantry, all formed into one battalion under Major George Sykes, it took its place in the column starting out on that short and memorable campaign ending in the disastrous battle of Bull Run. This "small but incomparable body of infantry," the only regular infantry in the column, formed part of the First Brigade (Porter's), Second Division (Hunter's).

It is impossible in the limits of this sketch to give more than the briefest outline of the part taken by the regiment in this campaign or in any of the campaigns and battles which followed, but it is not necessary to do more, as that part is a portion of the written history of our country. Its gallant conduct in this, the first great battle of the war, its unflinching steadfastness and perfect order in covering the flight of the panic stricken army, was but a presage of that which was to distinguish it throughout the war. The regiment lost in this battle five men killed, 26 missing, and four wounded; also two officers wounded and taken prisoners.

After the battle of Bull Run the battalion returned to Washington and there formed part of the Provost Guard. A few days after its return it was reviewed by President Lincoln accompanied by General McDowell. "In their passage down the line they drew rein in front of the colors, when the general, turning to Mr. Lincoln, said, 'Mr. President, there are the men who saved your army at Bull Run.' The President, looking up and down the line, replied, 'I've heard of them.'"

During the winter of 1861–62 the battalion of the regiment, brigaded with the Tenth Infantry, remained encamped at Franklin Square. Two of the paroled companies (F and I) having been exchanged, joined during the winter from Fort Hamilton. Companies C and E joined from Florida the following June in time to participate in the seven day's fight on the Peninsula. Company A did not join until the following fall when the whole regiment was once more united.

In March, 1862, the Third left Washington for Fortress Monroe to join McClellan's army previous to its advance to Yorktown. It was commanded by Major N. B. Rossell (Colonel Charles F. Smith, who had succeeded Colonel Bonneville upon his retirement in September, 1861, being on detached service as major general of volunteers) and formed part of the Regular Brigade, commanded by General Sykes. The regiment participated in the siege of Yorktown and in the Seven Days' Fight, taking a very conspicuous and gallant part in the battle of Gaines' Mill, June 27, when its commanding officer and six men were killed, 19 men wounded, and 19 miss-

ing; and of Malvern Hill, June 30 and July 2, in which Lieutenant McGuire and four men were killed, 11 men wounded and 9 missing.

Upon the death of Major Rossell the command of the regiment devolved upon Captain John D. Wilkins, who retained it until the following spring. Colonel Smith died April 25, 1862, and Colonel William Hoffman, promoted from the Eighth Infantry, became colonel of the regiment and remained such until the consolidation in 1869. He did not serve with the regiment, however, during the war, being on detached service as commissary general of prisoners.

From the Peninsula the regiment, with its division (now become Sykes' Division of Regulars) was transferred to the Army of Virginia under General Pope—joining in time to participate in the second battle of Bull Run, in which no regiment played a more prominent rôle than the 3d Infantry.

It arrived on the old battle-field about 7 o'clock on the morning of the 30th. A short time afterwards its brigade was formed in line of battle in front of the Dogan House, and the regiment ordered forward, as skirmishers, to occupy the crest of the hill in their front, their left resting on the Alexandria and Warrenton turnpike. It remained in this position about three hours when orders were received to advance the line. This was promptly and gallantly done, driving the enemy from some houses in front of their left—several men of the regiment being killed and wounded here. But it was later in the day that the regiment and brigade was to conspicuously distinguish themselves—when the division to which they belonged was to make a charge and cover a retreat destined to become historical for the steadfastness and intrepidity of the participants in it. It "saved the army," and drew, on the field of battle, from General MacDowell, the memorable exclamation, "God bless the regulars!" The regiment's losses in this battle were two officers and fourteen men wounded and thirty-one men missing, total fifty-two.

At Antietam the division was held in reserve at least most of the time, and did not, therefore, take as prominent a part as usual in the battle. It left Middletown on the morning of the 15th of September, crossed South Mountain, and reaching the east bank of Antietam River, took position behind some hills on the left of the turnpike leading direct to Sharpsburg. The Third Infantry was at once thrown out as skirmishers and occupied the crest of the river bank to the right and left of the bridge. It remained in this position all night and until relieved by the 4th Infantry, about 10 o'clock next morning. During the 16th and 17th, it remained in reserve, although exposed to a heavy fire from the enemy's artillery. On the 19th the regiment moved forward, with its division, in pursuit of the retreating enemy, passed through Sharpsburg, and on the 20th bivouacked near the Potomac, opposite Blackford's Fort. Skirmishers were here thrown out in front of each brigade and a desultory fire maintained with those of the enemy on the Virginia side.

At the battle of Fredericksburg, which came next, the division of regulars first acted as support to the attack on Marye's Hill. It left its bivouac at Falmouth on the afternoon of the 13th, and moved towards the upper pontoon bridge, the 3d leading the advance. The moment the head of the

column showed itself, the enemy opened fire upon it with shot and shell, and, while awaiting an opportunity to cross, the regiment lost three men wounded—one mortally. After effecting a crossing, the regiment, depositing their knapsacks in the street, moved hurriedly towards the scene of action, arriving at the southern edge of the city at the moment the attack on the enemy's outworks was repulsed, and encountering part of the fire of the enemy, by which several men were wounded. The regiment was then ordered to the right and took position in the cemetery. About midnight it advanced out on the plank road, relieved a portion of Humphries' Division, and with the 4th Infantry took position behind a tannery. Skirmishers were thrown out some three hundred yards to the right. At daybreak the enemy's pickets and sharpshooters opened a brisk fire upon them, from their intrenchments, but a stone's throw away, when they were withdrawn, but not until some were killed and several wounded. They still remained under constant front and enfilading fire from the enemy, within one hundred yards, securely sheltered behind stone walls and rifle pits, and, as General Sykes said in his report of the battle, "could offer no resistance only the moral effect of that hardihood and bravery which would not yield one foot of the line they were required to protect. No better test of the qualities of troops could be shown than that displayed by these brigades. Patience, endurance, discipline and courage were conspicuous."

About 11 A. M., the 3d and 4th effected an entrance into the tannery with their bayonets, through the brick walls. They soon after loopholed the walls and from these and the windows they succeeded in driving the enemy from the houses and rifle-pits on the right, relieving the brigade, in great measure, from the fire of the sharpshooters during the remainder of the day. At 12 o'clock that night the regiment was relieved, having held the position 24 hours, and proceeded to the city and bivouacked near St. George's Church. During the evening of the 15th it changed position three times. Toward morning it was placed in front and nearest the enemy, where it remained until the whole army had crossed safely to the northern banks of the Rappahannock, when it received orders to fall back, being the last to recross the river. The losses in this battle were three men killed and 12 wounded.

Shortly after this, while in camp at Henry House, the regiment was reorganized. Its strength present having been reduced to 12 officers and 408 enlisted men, Companies A, D, E and H were broken up, the men transferred and the officers attached to other companies. It remained a six company organization until the close of the war.

The regiment took part in Burnside's famous "Mud March," and, later, in the battles of Dowall's Tavern and Chancellorsville. In the latter it moved with the attacking column and participated in the engagements of May 1st. On the 2d, 3d, 4th and 5th, it held its position in the line of battle. It also assisted here in driving back to the field of battle some of the fugitives of the Eleventh Corps. The losses in this battle were four men wounded and four missing.

Gettysburg came next. As part of the First Brigade of Regulars it arrived on the battle-field early in the morning of July 2, having on the three consecutive days previous marched over 62 miles. It first acted as reserve

for the right and centre, but during the afternoon was hastily sent to the left, where it participated in the fierce fighting around the Round Tops and near Devil's Den, where the slaughter of the regular infantry was so fearful. But they "once more justified their old reputation; not a single man left the ranks, and they allowed themselves to be decimated without flinching. Eleven hundred combatants only out of an effective force of 2000 are left standing." Captain Freedly, who commanded the regiment, was so seriously wounded in the knee that he never rejoined the regiment and was ultimately retired. Lieutenants Butler, Parker and Morton were wounded, 8 men were killed, 61 wounded, six mortally, and two were missing, making a total loss of 75 out of an effective strength of less than 300.

The remnants of the regiment, now under Captain Lay, remained in line of battle all day during the 3d. On the 4th it was sent out on reconnoissance and had a brisk skirmish with the enemy, after which it returned to its station below Little Round Top, but was immediately sent out again on the front line of pickets. It remained on picket that night and until the pursuit of the enemy commenced the next day.

During the summer of 1863 the regiment was sent to New York, where it arrived August 21, to assist in suppressing the Draft Riots. Leaving New York September 14 it again took the field and participated in the operations which led up to, and was engaged in, the battle of Rappahannock Station, November 7, one man being wounded.

It took part in the Mine Run campaign, November 26 to December 2, after which it was again sent to New York Harbor where it remained, stationed at Forts Richmond, Hamilton and Columbus, until October, 1864, when it was transferred to Washington and stationed at Camp Relief in the northern outskirts of the city.

In February, 1865, the regiment, with a total strength present of only 11 officers and 212 men, was again sent to the Army of the Potomac. It joined at Petersburg, and was stationed from that time until the end of the war at General Meade's headquarters, participating in all the subsequent engagements of the Army of the Potomac until the final surrender of Lee's army at Appomattox. Thus ended the war, the Third having borne a meritorious part in 21 battles and sieges, losing in killed, wounded and missing a total of 267 men,—a number equal to its average strength present during the war.

In the celebrated race between Sherman and Meade after the surrender of the Confederate armies, when both strove to reach the city of Washington the first, the Third marched (by odometer) 82½ miles in three days, and this a greater part of the time in rain and mud. In the grand review of the armies before President Lincoln, the Third, as part of the Provost Guard, was the leading infantry regiment of the column. On the 4th of July the regiment, with the 10th Infantry, was ordered in haste to General Wright's headquarters, a few miles away, to quell the threatened mutiny in the Provisional Corps, or proposed "Corps of Observation." It remained on duty there until the 27th, when it was transferred to the barracks at Washington Arsenal.

In the fall the regiment was transferred by rail to St. Louis, where it arrived October 29. Here Companies A, D, E and H, were reorganized December 19, 595 recruits having been received.

In the spring of 1866 the regiment, now commanded by Colonel (bvt. M. G.) Hoffman who had joined during the winter, left St. Louis for Kansas and the Indian Territory, where it remained for the next eight years. The following is a chronological list of engagements of portions of the regiment with hostile Indians during this time :

1867.

May 23; Big Timbers, Kan.; detachment of E. June 11; near Big Timbers, Kan.; detachment of E. June 15; Big Timbers, Kan.; detachment of E. July 3; near Goose Creek, Colo.; detachment of E. September 22; Pawnee Fork Bluff, Kan.; detachment of A.

1868.

September 2; Little Coon Creek, Kan.; detachments of A, F and H. September 11 to 15; Sand Hills, I. T.; Company F. September 30; Big Bend, Kan.; Company D. October 1; attack on Fort Zara, Kan.; Company D. October 1; between Forts Larned and Dodge, Kan.; Company E. October 3; Crow Creek, Kan.; detachment of D. October 26; near Fort Dodge, Kan.; Company E. November 19; near Fort Dodge, Kan.; Companies A and H.

1870.

May 31; Bear Creek, Kan.; detachments of B and F. June 11; Camp Supply, I. T.; Companies B, E and F.

1871.

July 2; Fort Larned, Kan.; Companies C and E.

1874.

June 19; Buffalo Creek, I. T.; detachment of D. June 21; Buffalo Creek, I. T.; detachment of A. June 24; Bear Creek Redoubt, Kan.; detachment of A.

In the reduction of the army in 1869, one-half of the 37th Infantry (Companies A, C, E, F and I) was consolidated with the Third, adding to the already long list of battles on her colors, those of Shiloh, Murfreesboro, Chickamauga, Missionary Ridge, Resaca, New Hope Church, Kennesaw Mountain, Atlanta and Jonesboro.

Colonel (bvt. M. G.) G. W. Getty and Lieutenant-Colonel (bvt. B. G.) John R. Brooke, both of the 37th, were transferred to the Third in place of Colonel (bvt. M. G.) Hoffman and Lieutenant-Colonel (bvt. B. G.) Alfred Sully, placed on the unassigned list. General Getty was transferred to the 3d Artillery, December 31, 1870, never having joined the regiment, and Colonel Floyd-Jones was transferred to the Third from the unassigned list. He joined at Fort Dodge, Kansas, the following June and retained command of the regiment until his retirement in 1879.

In the early part of the summer of 1874 the regiment was transferred from Kansas to Holly Springs, Miss., where it was concentrated by the middle of July. It remained there in camp until the following September, when the headquarters and four companies took station at Jackson Barracks, La. Other companies were quartered in the city of New Orleans,

and the remainder distributed to various points throughout the State. The regiment remained in the Department of the Gulf on duty in connection with the enforcement of the Civil Rights bill until July, 1877, when it was ordered to Pennsylvania in connection with the riots of that year. Portions of it were on duty at Indianapolis, Ind.; Newport Barracks, Ky.; and at Pittsburg, Scranton, and Wilkesbarre, Pa.

By September 3, 1877, the entire regiment was concentrated at Wilkesbarre preparatory to a change of station to Montana. The headquarters and six companies were to go to Helena, and four companies with the lieutenant-colonel to Fort Missoula. The regiment left Wilkesbarre September 21 and arrived at Corrinne, Utah, on the 28th. From Corrinne the commands marched to their new stations, arriving on the 7th and 14th of November, respectively, and immediately went to work building quarters.

In the spring of 1878 the headquarters and six companies left Helena for the Milk River country, General Brooke,—who was in command of the regiment and also the District of Montana (Colonel Floyd-Jones on leave), —having been ordered to select a site for a new post in that region. The present site of Fort Assinniboine having been selected, the command camped at the Marias River July 23, and remained there until fall, when the headquarters went to Fort Shaw and took station, and the companies were distributed to various points in Montana. Company A took station at Fort Benton and Companies C and E at Fort Shaw. Companies F and G proceeded to Fort Belknap, thence 65 miles east following the course of the Milk River, where they captured 7 lodges of British half-breeds who had been causing trouble, and escorted them into Fort Belknap after having burnt their houses. The companies then took station at Fort Shaw. Company K was stationed at Fort Logan.

During the summer of this year various scouting parties were sent out from the Missoula garrison to watch the different trails and mountain passes for bands of hostile Indians, but with one exception they did not come into contact with any. Lieutenant Wallace with a mounted detachment of 13 men of Companies B, H and I, one guide, and two other citizens, overtook a band of Nez Percés, July 14, on the Middle Fork of Clearwater River, attacking them and, in a battle of two hours, killing 6 and wounding 3 Indians, and capturing 31 and killing 23 of the animals in their possession. No casualties to detachment.

In obedience to instructions from the district commander to "scout the country thoroughly for lurking bands of hostile Indians and road agents," a number of parties were sent out from the different posts garrisoned by the regiment during the spring of 1879, but, except in two cases, without noteworthy result.

Sergeant A. Cecil of Company A, with seven men,—part of a mounted detachment on a scout from Fort Logan in the direction of the Mussel Shell,—had a skirmish with a band of 8 hostile Sioux Indians, April 17, near Careless Creek, killing the entire party.

Lieutenant Kraus with a detachment of 18 men of Company A, while returning from Fort Benton from patrolling the Missouri River, having with him 9 horses which had been recaptured from the River Crows, was

attacked while in camp on Eagle Creek, Mont., May 4, about 11 o'clock P. M. Twelve horses and one mule belonging to the Government and 8 of the recaptured horses were stampeded and lost.

Various military telegraph lines, connecting the different posts in the territory, were constructed by the regiment during the year.

The retirement of Colonel Floyd-Jones, March 20, 1879, promoted Lieutenant-Colonel (Bvt. B. G.) L. P. Bradley, 9th Infantry, to the Third, and Lieutenant-Colonel Brooke of the Third to the 13th. General Bradley never joined, and on June 14th transferred with General Brooke, who remained colonel of the regiment and commanded it until he was promoted brigadier general April 24, 1888.

In the spring of 1879, Company E left Fort Shaw and took station at Fort Ellis, where it was joined the following summer by Company C. These two companies remained at this post until its abandonment in the fall of 1886, when they took station at Fort Custer.

In the summer of 1880 Company K was sent to the new post of Fort Maginnis, and in 1881 Companies A and K were sent to Fort Shaw. During the summer and fall of 1882-83 two or more companies from Fort Shaw were kept in the field observing the Indians at the Blackfeet Agency and protecting the settlements from the incursions of hostile Indians from the north. Three companies were also sent out from Fort Missoula in the summer of 1883, to assist in arresting renegade Indians on the Flathead reservation.

At the time of the threatened outbreak of the Crow Indians under "Sword Bearer," in the fall of 1887, Companies B and F were transferred from Fort Missoula to Fort Custer. Companies B and E were in line with other troops during the skirmish at Crow Agency, November 5, but were not actively engaged though exposed to fire. After the trouble subsided, Sword Bearer having been killed, Companies B and F returned to Fort Missoula, C and E remaining at Fort Custer.

Upon the promotion of General Brooke to be brigadier general U. S. A., April 24, 1888, Colonel (Bvt. B. G.) E. C. Mason was promoted to the regiment from lieutenant-colonel 4th Infantry, and has commanded it since that time.

In the spring of 1888 the headquarters and Companies A, D, E, H and K were transferred to Fort Snelling, Minn., and Companies B, C, F and I to Fort Meade, Dak., Company G going to Fort Sisseton, Dak., where it remained until that post was abandoned the following June, when it was sent to Fort Snelling.

In common with other infantry regiments, Companies I and K were skeletonized in August, 1890, and the enlisted men transferred to other companies. Company I was in the field at the time on the Cheyenne River watching hostile Indians. It was reorganized as an Indian company the following year at Fort Sully, S. D., where it remained until early in 1893, when it joined at Fort Snelling, where it was again skeletonized in October, 1894, the Indians being discharged.

Companies C and F participated in the Sioux campaign of the winter of 1890-91, being in the field the entire winter as part of the battalion com-

manded by Colonel E. V. Sumner. Company C made a forced march while joining the battalion on the Cheyenne, of 67 miles in 50 hours and twenty minutes.

Early in January, 1891, Companies H and B were sent to Fort Sully, S. D., while Sitting Bull's band of Indians were held there. In the following May they took station at Fort Snelling. Companies C and F were also sent to Fort Snelling this spring and the whole regiment (except the Indian company) was brought together there, where it has since remained.

In the spring of 1892, Companies A and E proceeded to the Sisseton and Wahpeton reservation, where they remained about three weeks on duty in connection with the opening of that reservation to settlement.

The regiment proceeded to Chicago, October 18, 1893, and participated in the military ceremonies connected with the dedication of the World's Fair buildings. Companies C and F having been specially selected, returned to Jackson Park on the 8th of June and remained on duty there with the War Department exhibit until the close of the fair.

The next tour of detached service for a portion of the regiment was to Leech Lake, Minn. The Indian agent there having accidentally shot an Indian, they became very much excited, threatening to kill him and closely besieging him in his house. Company D under Lieutenant McCoy left Fort Snelling and proceeded in haste to the point of trouble. After liberating the agent and quieting the Indians the company returned to its station, June 28.

The regiment, or a large part of it, encamped with the National Guard of Wisconsin in the summer of 1890 and 1891. In 1892 it took part in a practice march and field manœuvres; and in 1893 and 1894 encamped with the Minnesota National Guard.

During the year 1894 the regiment had considerable duty in connection with strikes. In April and May, Companies A, B, D and G, under Major Patterson, were on duty on the Great Northern R. R.; and in July, Companies C, E and H, were called upon for service on the line of the Northern Pacific R. R.

The last detached service for which the regiment has been called upon,* was one of humanity during the recent forest fires in northern Minnesota, when Company G, under Captain Hale, was sent to the desolated district with tents, etc., to assist in furnishing aid and shelter to the afflicted and homeless.

Thus ends the chronicle of a century's service.

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* Written in the fall of 1894

NOTE.—The writer is under obligations to General J. H Eaton, Colonel Daingerfield Parker, Colonel Richard I. Dodge, General O. L. Shepherd (who has since died), and to Mr. F. W. Heitman, for much information used in the preparation of this sketch.

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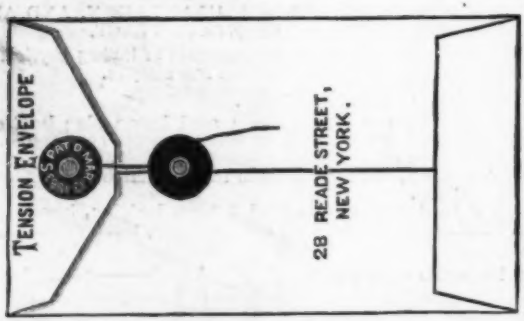

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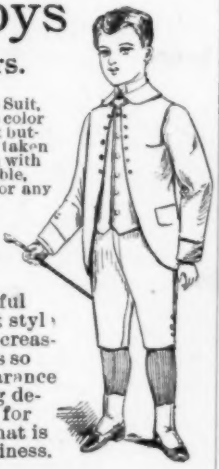

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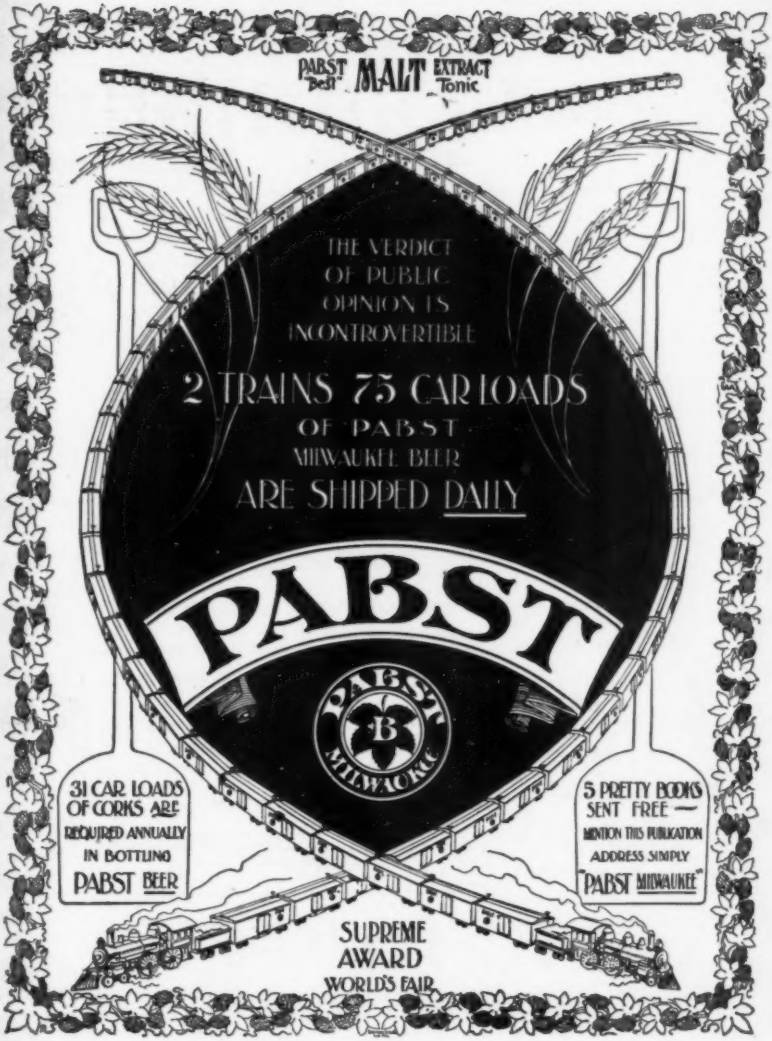
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